U-006-408.1

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OPERABLE UNIT 4 INITIAL SCREENING OF ALTERNATIVES COMMENT-RESPONSE DOCUMENT

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REPORT

[redacted]

1946

OPERABLE UNIT 4

INITIAL SCREENING OF ALTERNATIVES

COMMENT-RESPONSE DOCUMENT

U.S. EPA COMMENT-RESPONSE

GENERAL COMMENTS

NOTE: **A reorganization of the Task 12 report was made as a result of the following comments. The report format was revised as follows:**

Chapter 4 became Chapter 2
Chapter 2 became Chapter 3
Chapter 3 became Chapter 4
Tables 1-2 and 1-3 were added
Appendix B was added

COMMENT #1: Insufficient information is presented on the contaminant characteristics and volumes to permit proper development and screening of alternatives.

For example, 10-year old data on K-65 silos, (Silos 1 and 2) is presented. Nothing is included for the metal oxide silo (Silo 3). The lack of volume and waste characterization data makes the cost information meaningless, although cost did not eliminate any potential alternative from being carried forward for detailed analysis. In addition, Page ES-1 states that the report is based on information presented orally to U.S. DOE on June 13, 1989, and has not been updated. If any characteristic or volume information has been collected in the last year, it should be included to support the findings. The report should be reorganized and completed when all the data is available. The technologies and process options probably will not change significantly in the revised report. However, information should be presented to support the conclusions and recommendations of the report.

RESPONSE #1: Noted - Volume data indeed were available at the time of writing. They were utilized in the

development of cost and other remedial considerations. Inadvertently, these data were not included in the tables in Section 1. These data have now been added.

During the final revision, analytical data from 1989 WMCO sampling were received and incorporated into the report. The new information has not significantly altered cost estimates or required revisions. In consideration of these data, it is believed the reported cost information is meaningful.

COMMENT #2: Page ES-2 states that the physical properties of the K-65 and metal oxide silos are significantly different. If the materials are as different as indicated, consideration should be given to addressing the silo remediation as two separate operable units.

RESPONSE #2: Noted - This has, in effect, been done within the report, however it was not separated into distinct sub-operable units. There are alternatives defined for each silo within the body of the report. Revision of this report to separate the operable units is not possible within the required time frame for the Task. The Task 15 report (Draft Feasibility Study) will be written to separate the K-65 and metal oxide silos as distinct sub-operable units.

COMMENT #3: The EE/CA states that it was prepared in accordance with EPA's "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA." Although the guidance document was certainly used in preparing the report, it was not followed with respect to organization. The guidance document proposes screening remedial technologies and then process options within the technologies to evaluate their applicability to the site and waste characteristics. Applicable process options are then combined into alternatives. However, the report (Chapter 2) develops alternatives based on technologies rather than process options. Following the alternative developments, the technologies used are discussed in detail (Chapter 4). Each technology and process option should be explained and reviewed with respect to its applicability to the waste and site characteristics, and the report should be reorganized.

RESPONSE #3: Accept - It is presumed the Initial Screening of Alternatives document, not the EE/CA, is the document referenced. The actual alternative screenings were conducted by screening technologies and then process options as directed by the CERCLA guidance document. The report was written for readability and not to represent the engineering train-of-thought. The report will be rearranged so that the chapters are in the same order as the guidance document.

COMMENT #4: Several procedures required by the National Contingency Plan (NCP) and detailed in the guidance document have not been followed.

COMMENT #4a: Remedial action objectives are based on the contaminants of concern, exposure pathways, and cleanup levels required to protect human health and the environment. The report reviewed only removal and contaminant-isolation alternatives; it did not evaluate process options that use treatment to reduce the mobility, toxicity, or volume of hazardous substances. The immediate elimination of methods that may reduce migration through exposure pathways needs additional explanation.

In addition, the report does not state the contaminant cleanup levels. The volume of contaminants and the level of protection required for stored materials cannot be evaluated without defined cleanup goals. The remedial action objectives should be better defined.

RESPONSE #4a: Noted - The report does evaluate process options that reduce the mobility, toxicity, and volume of contaminants. Alternative 2 is an in-situ stabilization process, which reduces the contaminant mobility and toxicity. Alternatives 6 and 7 include stabilization and chemical processing options, both of which also reduce the contaminant mobility and toxicity. Finally, Alternatives 8 and 9 include contaminant separation which will reduce the volume of hazardous material.

Because of the schedules agreed upon by both the EPA and DOE, the RI, RA and FS were conducted in parallel as opposed to in series. The Baseline Risk Assessment thus was not completed in time for the remedial action objectives to be defined any further for inclusion in the Initial Screening of

Alternatives document. The refined remedial action objectives are contained in the Detailed Analysis of Alternatives (Task 13) and are as follows:

- Prevent current and future above-background radiation doses to the public from all pathways and all radionuclides (other than radon) from exceeding twenty-five percent of the 100 mrem annual dose limit.

- Prevent current and future radon-222 flux from a source from exceeding 20 pCi/sq.m-s.

- Prevent current and future above-background radiation doses to the public from airborne radionuclides (other than radon) from exceeding twenty-five percent of the 10 mrem/yr annual air dose limit.

- Prevent contamination of the groundwater from reaching twenty-five percent of a 4 mrem above-background annual dose limit for radionuclides and Maximum Contamination Levels (MCLs), proposed MCLs, or risk-based derived cleanup levels for non-radioactive hazardous materials.

COMMENT 4b: The guidance document requires documentation for eliminating remedial technologies in process options during screening. The guidance also suggests a method of presenting and documenting the screening of technologies and process options. Figure 1 of the report did not follow this procedure (missing) technologies used would likely be the same, better documentation is needed of how they were selected and others eliminated.

RESPONSE #4b: Noted - Refer to Response #3.

COMMENT #4c: The guidance document suggests reviewing various process options within a technology and selecting one or two for developing alternatives. However, the report develops alternatives from technologies, not process options. For example, the alternatives use removal of material through mechanical, hydraulic, or pneumatic means. The three methods of removal should be analyzed in the report and one or two selected as the best. The process option selected would then be used in the

alternative, not the technology type. Prior to alternatives development, the process options be (sic) reviewed and selected.

RESPONSE #4c: Noted - Refer to Response #3.

COMMENT #4d: The guidance document suggests that costs for alternatives be compared on a present-worth basis. Capital and operation and maintenance (O&M) costs must be estimated, and a present worth for the alternative calculated.

RESPONSE #4d: Noted - Capital costs were assumed to be 95% or more of the total costs for the alternatives in this report. This assumption was confirmed in the Detailed Analysis of Alternatives. In fact, the calculated present worth of a relatively small O&M cost after 30 years approaches zero. The assumption has a negligible effect on the cost estimates for any of the alternatives.

COMMENT #4e: The ARARs should be presented in the format should (sic) in the U.S. EPA guidance and as agreed upon in a May 3, 1990, meeting in Chicago.

RESPONSE #4e: Noted - A separate ARARs document (in the required format) has been submitted to the EPA in June of this year.

SPECIFIC COMMENTS

COMMENT: Page ES-1, Paragraph 2: Remedial action objectives control and reduce the release of radon gas from wastes.

RESPONSE: Agree - Text revised to state "...Control and reduce the release of radon gas from wastes."

COMMENT: Page ES-1, Paragraph 3: The remedial action objectives must have specific cleanup levels. The alternatives must be protective of human health and the environment. Without specific limits, protection cannot be evaluated.

RESPONSE: Noted - Refer to Response #4a.

COMMENT: Page ES-2, Paragraph 4: It would be helpful to explain what conventional physical stabilization technologies are.

RESPONSE: Accept - Text revised to state "...Both conventional

physical stabilization technologies (solidification, encapsulation, etc...) and vitrification are considered options."

COMMENT: Page ES-4, Paragraph 4: The effectiveness evaluation should indicate that both short- and long-term effectiveness are addressed.

RESPONSE: Agree - Text revised to state "...The short- and long-term effectiveness evaluations were determined by these considerations:"

COMMENT: Page ES-4, Paragraph 6: Capital cost for alternatives screening is discussed in Chapter 4, page 37, of the guidance document. Although similar to Chapter 6, the costs are not as detailed and are used to compare alternatives with a +50 to -30 percent accuracy.

RESPONSE: Agree - Text revised to state "...(as defined in OSWER Directive 9355.3.-01, page 4-24)..."

COMMENT: Page ES-5, Paragraph 1: Table ES-1 was not included.

RESPONSE: Noted - This was apparently a single copy error. Copy of table is attached.

COMMENT: Page 1-2, Section 1.3.1: The Clearwell is not shown on Figure 1-2. Either add the Clearwell to Figure 1-2 or reference Figure 1-3.

RESPONSE: Agree - Figure 1-2 revised to include the Clearwell.

COMMENT: Page 1-2, Section 1.3.2: It is unclear whether the K-65 silos have been totally coated with gunite or just exposed portions.

RESPONSE: Agree - Text revised to state "...The entire K-65 silos' exteriors have been coated with 0.75 inch of gunite..."

COMMENT: Page 1-6, Section 1.3.3: The importance of the undetermined amount of thorium and its effect on selecting alternatives must be discussed.

RESPONSE: Agree - Text revised to state "...radium (Ra-226), radon (Rn-222), uranium (0.71 weight percent U-235), and thorium (Th-230)..." and "...Tables 1-2 and 1-3 summarize the results of the current sampling efforts."

COMMENT: Page 1-9, Table 1-1, The units for the volume must be provided. Since the K-65 silos are considered to be moist, all information on the moisture content should

be included. Table 1-1 should explain whether the data presented under NLO is considered valid site data.

RESPONSE: Agree - Table 1-1 revised to include volume units, moisture content, and validation note.

COMMENT: Page 1-10, Section 1.3.3: The report says that silo 3 is not a significant radon source and is not believed to be a source of contaminant migration. If so, the report should explain the actual contamination problem associated with the Silo 3 waste.

RESPONSE: Agree - Text revised to include "...It is, however, still a source of radioactive waste and a potential airborne contaminant hazard due to its dry powdery consistency."

COMMENT: Page 2-1, Section 2.1: Include the word "Report" in the third line.

RESPONSE: Agree - Text revised to state "...Development of Alternatives report..."

COMMENT: Page 2-1, Section 2.1.1: The report should clarify that the silos are an active source of radon contamination to the atmosphere.

RESPONSE: Agree - Text revised to state "... Operable Unit 4 is an active source of radon contamination to the atmosphere and represents a potential source of contamination to groundwater and other environmental media..."

COMMENT: Page 2-2, Section 2.1.1: First Paragraph: The NCP does not require full removal of the contaminant source. Instead, the alternatives must be protective of human health and the environment. Other alternatives that may be considered do not include full removal, but are protective.

RESPONSE: Agree - Text revised to state "...all of the alternatives being considered...would achieve the required protection of human health and the environment."

COMMENT: Page 2-2, Section 2.1.2: Although similar in nature, the general response actions are not the same as used in the guidance document. The development of alternatives would be better supported if the guidance document was followed more closely.

RESPONSE: Noted - Refer to Response #3.

COMMENT: Page 2-2, Section 2.1.2: The text and Figure 2-1 are inconsistent. Containment is not shown on Figure 2-1. Chemical treatment is shown on the figure, but not included in the text. Tumulus, above-grade vaults, and off-site RCRA facilities are not shown on Figure 2-1.

RESPONSE: Agree - Figure deleted.

COMMENT: Page 2-3, Figure 2-1: This figure is not consistent with the guidance document. It is harder to follow and doesn't document technologies eliminated.

RESPONSE: Agree - Figure deleted.

COMMENT: Page 2-5, Table 2-1: "No action" should not be considered on-site disposal.

RESPONSE: Agree - Table revised to exclude "No action" as on-site disposal.

COMMENT: Page 3-1, Section 3.1: As detailed in the guidance document, alternatives should be developed from process options, not technologies.

RESPONSE: Agree - Text revised to state "...Operable Unit 4 remedial action alternatives developed in the previous task had been assembled by combining process options from viable technologies in an attempt to meet the established remedial action objectives."

COMMENT: Page 3-1, Section 3.1: It is helpful to add the NCP references as authority for the analysis undertaken, for example: The last sentence of this paragraph: It is the intent...by comparatively evaluating them on the basis of effectiveness, implementability and cost in accordance with the NCP at 300.430(e)(f).

RESPONSE: Agree - Text revised to state "...It is the intent...by comparatively evaluating them on the basis of effectiveness, implementability and cost in accordance with the NCP at 40CFR300.430(e & f) (Remedial Investigation/Feasibility Study and Selection of Remedy)."

COMMENT: Page 3-1, Section 3.2: Information is needed concerning time estimates for remediation, particularly since contaminant volumes have not been defined.

RESPONSE: Noted - Table 1-1 has been revised and Table 1-2 added to include contaminant volumes. Time estimates for remediation are included in Task 13.

COMMENT: Page 3-4, Section 3.3.1: A key aspect of the screening evaluation is the effectiveness of an alternative in protecting human health and the environment in accordance with the NCP at 300.430(e)(7)(i).

RESPONSE: Agree - Text revised to state "...A key aspect of the screening evaluation is the effectiveness of an alternative in protecting human health and the environment in accordance with the NCP at 40CFR300.430(e)(7)(i) (Remedial Investigation/Feasibility Study and Selection of Remedy)(Effectiveness)."

COMMENT: Page 3-4, Section 3.3.2: Implementability is a measure of both the technical and administrative feasibility...alternative in accordance with Section 300.430(e)(7)(ii) of the NCP."

RESPONSE: Agree - Text revised to state "...Implementability is a measure of both the technical and administrative feasibility...alternative in accordance with the NCP at 40CFR300.430(e)(7)(ii) (Remedial Investigation/Feasibility Study and Selection of Remedy)(Implementability)."

COMMENT: Page 3-5, Section 3.3.3: Cost estimates were prepared for each alternative to allow comparison of costs among similar alternatives in accordance with Section 300.430(e)(7)(iii) of the NCP."

RESPONSE: Agree - Text revised to state "...Cost estimates were prepared for each alternative to allow comparison of costs among similar alternatives in accordance with the NCP at 40CFR300.430(e)(7)(iii) (Remedial Investigation/Feasibility Study and Selection of Remedy)(Cost)."

COMMENT: Page 3-5, Section 3.3.3: The data uncertainties that affect the cost estimates should be listed. These can then be improved during detailed review.

RESPONSE: Agree - Text revised to state "...The data uncertainties associated with the silo, berm, and subsoil contaminants, at this stage of the RI/FS for Operable Unit 4, forced these estimates to be very approximate."

COMMENT: Page 3-5, Section 3.3.3: If O&M costs cannot be determined, they cannot be judged negligible. The O&M costs should be included. The type of monitoring and associated costs must be included in the O&M costs.

Finally, the report should discuss the potential future remediation efforts that are not costed.

RESPONSE: Agree - Text deleted

COMMENT: Page 3-5, Section 3.3.4: Suggest follow NCP language here: Nevertheless, these technologies were carried through the screening phase if there was reason to believe that they offered the potential for comparable or superior impacts than other available approaches; or lower costs for similar levels of performance than demonstrated treatment technologies in accordance with Section 300.430.

RESPONSE: Agree - Text revised to state "...Nevertheless, these technologies were carried through the screening phase if there was reason to believe that they offered the potential for comparable or superior impacts than other available approaches or if they offered the potential for lower costs for similar levels of performance than demonstrated treatment technologies in accordance with the NCP at 40CFR300.430(Remedial Investigation/Feasibility Study and Selection of Remedy)(Implementability)."

COMMENT: Page 3-5, Section 3.4: ARARs must also be addressed for contaminants that do not remain on-site. The sentence should be modified.

RESPONSE: Agree - Text revised to state "...Contaminant-specific ARARs address the acceptable amount of concentration of a specific pollutant that may be found in or discharged to soil, water, and air."

COMMENT: Page 3-6, Section 3.5: It is unclear where the assumed off-site disposal facility is located. The location assumed for cost estimating purposes should be defined.

RESPONSE: Noted - The off-site disposal facility location assumed for cost estimating purposes is the Nevada Test Site (NTS) as stated in Section 3.5.1.

COMMENT: Page 3-6, Section 3.5: The detailed analysis of alternatives is always performed after the screening of alternatives. Define the assumptions used to screen alternatives so that when the data is collected, the assumptions can be checked.

RESPONSE: Noted - Briefly the assumptions used in the analyses of alternatives were as follows:

The samples obtained during the fall, 1989 sampling program, which have been used in the Phase I testing, are representative of the entire contents of Silos 1 and 2. (The Silo 3 sampling appears adequate, and further sampling is not anticipated).

The results of the treatability testing will be available in time to be incorporated into the selection of the Alternative.

A five foot depth of soil under the silo and five foot radial section of the berm around the silo are sufficiently contaminated to require treatment. (This assumption will be resolved by the analyses of materials from slant and berm boring programs).

Any actions to be taken on the silos as a result of the current EE/CA study will not impact the ability to perform the Alternative selected in the RI/FS.

COMMENT: Page 3-7, Section 3.5.2: The word "reduced" is not used correctly. The short-term effectiveness of an alternative may be less than another alternative, but it is not reduced.

RESPONSE: Agree - Text revised to state "...the short-term effectiveness ranking of the on-site disposal option will be less."

COMMENT: Page 3-7, Section 3.5.4: No reasons for off-site disposal were stated, only difficulties. Additional discussion is needed.

RESPONSE: Noted - This section is meant to establish comparative implementability, not advantages or disadvantages of a given disposal option.

COMMENT: Page 3-7, Section 3.5.5: By definition of no-action, no remediation is planned. The comparison of cost savings is questionable when actual cleanup levels and volumes have not been defined.

RESPONSE: Noted - The volumes in question have been defined and were used for the cost analysis. These data were inadvertently left out of the document and will be included in the forthcoming revision. Cleanup levels are defined in Task 13 (See Response #4a).

COMMENT: Page 3-7, Section 3.5.5: Institutional controls have not been listed as a remedial technology or included in alternatives.

RESPONSE: Agree - Text revised to state "...When considering the O&M costs associated with maintaining the on-site disposal facility..." ("Institutional controls" deleted)

COMMENT: Page 3-7, Paragraph 3.5.5: Define the content of 10CFR61 to assist the readers. Page 3-5. Paragraph 3, states that O&M costs are negligible; however, page 3-7 states that the O&M costs are significant. This should be consistent.

RESPONSE: Agree - Text revised to state "...10CFR61, Licensing Requirements for Land Disposal of Radioactive Waste..."

Noted - Page 3-5, Paragraph 3, states that "...The only operation and maintenance (O&M) costs considered are those associated with tumulus maintenance over a 30-year period. Other O&M costs...were judged to be negligible ..." Page 3-7 states that "...The annual O&M costs to maintain a disposal facility...will be significant..." (i.e. tumulus maintenance). Two different types of costs were mentioned, therefore there is no discrepancy.

COMMENT: Page 3-8, Section 3.5.7: "TCLP" should be spelled-out when it is first referenced.

RESPONSE: Agree - Text revised to state "...toxicity characteristic leaching procedure (TCLP) or best demonstrated available treatment (BDAT) standards."

COMMENT: Page 4-1: In accordance with the guidance document, technologies should be reviewed and evaluated before alternatives are defined.

RESPONSE: Accept - The technologies were in fact reviewed and evaluated before the alternatives were defined. The document was organized for readability and not to reflect the engineering train-of-thought, however, it will be restructured for the forthcoming revision.

COMMENT: Page 4-7, Section 4.1: Water treatment needs to be discussed. The report should state whether water is to be treated in existing facilities, and if so, include the treatment costs in other sections of the report.

RESPONSE: Agree - Text revised to state "...the contaminated water will be recycled to the mining head or used in

the solidification process." (There is no water treatment involved with the hydraulic mining technology)

COMMENT: Page 4-7, Section 4.2.2: As described in the guidance document, the process options should be discussed, then they should be reviewed with respect to implementability, effectiveness, and cost. Finally, one or two should be selected for alternatives development.

RESPONSE: Noted - Refer to Response #3.

COMMENT: Page 4-9, Section 4.3: See comment for 4.2.2 above.

RESPONSE: Noted - See response for 4.2.2 above.

COMMENT: Page 4-10, Section 4.4.2: The moisture content should be listed for the wastes so the use of vitrification can be evaluated.

RESPONSE: Agree - Table 1-1 revised to include moisture content data.

COMMENT: Page 4-11, Section 4.5: Last sentence, add "the" in front of "lowest".

RESPONSE: Agree - Text revised to state "...from the silo wastes, the lowest level..."

COMMENT: Page 4-11, Section 4.6: The discussion of sludge treatment and disposal requirements needs to be further developed.

RESPONSE: Agree - Text revised to state "...Sludges from these operations will be treated with solidification or vitrification ."

COMMENT: Page 4-12, Section 4.7: Regulation titles should be defined for the reader.

RESPONSE: Agree - Text revised to include regulation titles.

COMMENT: Page 4-14, Section 4.7: See comment for 4.2 above.

RESPONSE: See response for 4.2.2 above.

COMMENT: Page 4-20, Section 4.9: Define 49 CFR 173.469 for the reader.

RESPONSE: Agree - Text revised to include regulation title.

COMMENT: Page 4-22, Section 4.9: See comment for 4.2 above.

RESPONSE: See response for 4.2.2 above.

COMMENT: Page 5-1, Section 1: See general comments. Many alternatives address Silo 1 and 2 (Alternatives 6, 7, 8, 9) or Silo 3 (Alternatives 3, 4). For final remediation, all silos should be included in an alternative. A figure for each alternative would be helpful.

RESPONSE: Noted - See Response #2

COMMENT: Page 5-3, Section 5.1.3.3: The silos would require maintenance under the no-action alternative.

RESPONSE: Agree - Text revised to state "...This alternative is good from the standpoint of maintenance because little effort would be required to maintain the monitors, silos, and berms."

COMMENT: Page 5-3, Section 5.1.4: The monitoring equipment and the scope of monitoring each medium should be described. Additionally, O&M costs are associated with the monitoring equipment.

RESPONSE: Agree - Text revised to state "...The required monitoring equipment and maintenance could involve up to $1 million."

COMMENT: Page 5-3, Section 5.1.6: This is an inappropriate use of cost effectiveness as defined in the NCP. Section 300.430(f)(1)(ii)(D) explains that an alternative is cost effective if its costs are proportional to overall effectiveness.

RESPONSE: Agree - Text revised to state "...Initially, this alternative has the lowest capital costs..."

COMMENT: Page 5-3, Section 5.1.6: Paragraph 5.1.4 states that the capital costs could be $1 million. The costs should be consistent.

RESPONSE: Agree - Text revised to state "...Initially, this alternative has the lowest capital costs..."

COMMENT: Page 5-4, Section 5.2.1: Describe the procedures for verifying that the grout under the silos assures a seal. If there is no seal, migration could continue.

RESPONSE: Agree - Grouting was previously eliminated from this alternative, the text was in error. Grouting has been removed from the text.

COMMENT: Page 5-5, Section 5.2.1.6: Explain why Silos 1 and 2 will subside and how leachate will be collected and treated.

RESPONSE: Accept - Text revised to state "...Leachate will be generated due to K-65 silo waste subsidence caused by the added weight of the installed impermeable cap."

COMMENT: Page 5-5, Section 5.2.2.1: The uncertainty of the containment techniques need to be addressed here or during evaluation of the containment technologies.

RESPONSE: Agree - Text revised to state "...Modeling data and current contamination levels for the areas under the silos are not available and will impact the design of the containment technology."

COMMENT: Page 5-6, Section 5.2.3.3: The perpetual maintenance and monitoring requirements and costs should be discussed. The O&M costs need to be included in the costs.

RESPONSE: Agree - Text revised to state "...Maintenance and monitoring would be required to ensure that the remedial action objectives continue to be met."

COMMENT: Page 5-7, Section 5.3.1: It may be more appropriate to grout prior to removing the silo domes to protect the environment if there is a spill.

RESPONSE: Noted - Grouting was eliminated from the alternative and accidently left in the text. Text has been corrected.

COMMENT: Page 5-7, Section 5.3.1: If silos are grouted and a slurry wall is installed to the grout, a bathtub effect could occur. Water collection and an impermeable cap should be considered to minimize this effect.

RESPONSE: Noted - Grouting was eliminated from the alternative and accidently left in the text. Text has been corrected.

COMMENT: Page 5-8, Section 5.3.1: In-situ vitrification and chemical stabilization should be discussed in Chapter 4.

RESPONSE: Agree - Text moved to Chapter 4 (Technology and Process Option Refinement).

COMMENT: Page 5-8, Section 5.3.1: Vitrification in the silos could affect the strength of the silo wall. This needs to be addressed.

RESPONSE: Agree - Text revised to include "...During the vitrification process, the silo walls will be vitrified along with parts of the berm."

COMMENT: Page 5-9, Section 5.3.1.3: Discuss the information to be generated from the pilot-scale study and how it will be used.

RESPONSE: Agree - Text revised to include "...The pilot-scale study would be necessary to determine the voltages, intrusion depth, and other technical criteria for the vitrification process."

COMMENT: Page 5-10, Section 5.3.1.7: Define NESHAP for the reader.

RESPONSE: Agree - Text revised to state "...National Emission Standards for Hazardous Air Pollutants (NESHAP) or National Pollutant Discharge Elimination System (NPDES)..."

COMMENT: Page 5-11, Section 5.3.3.5: As previously discussed, vitrification and chemical stabilization could be in separate alternatives. Then, in-situ vitrification would compare poorly to stabilization on a cost basis, but may be preferred due to effectiveness or implementability.

RESPONSE: Noted - In effect they have been treated as separate alternatives. In order to minimize duplication of time and effort they have been incorporated into one alternative in the document. This does not mean, however, that if a given treatment is ruled out that the other will also be eliminated.

COMMENT: Page 5-14, Section 5.4.1.1: The packaging system should be added to the systems requirements list.

RESPONSE: Agree - Text revised to include packaging method.

COMMENT: Page 5-14, Section 5.4.1.3: Since the volume of Silo 3 has never been stated, more information is needed to explain how the time frame was estimated.

RESPONSE: Agree - Table 1-1 has been revised to include the volume data for Silo 3 used in the time estimations.

COMMENT: Page 5-15, Section 5.4.1.6: Explain where the wastewater will be recycled.

RESPONSE: Agree - The hydraulic removal system water will be recycled within the system (i.e. sent back to the mining head), therefore there will not be a wastewater stream. The text has been revised to exclude wastewater from the system.

COMMENT: Page 5-16, Section 5.4.5: Characterization of Silo 3 wastes is needed.

RESPONSE: Agree - Table 1-1 has been revised and Tables 1-2 and 1-3 have been added to show the Silo 3 data.

COMMENT: Page 5-17, Section 5.5.1: Packaging was required in Alternative 3.

RESPONSE: Agree - Text revised to state "...The additional requirement to be met for this alternative involves transportation to an approved off-site disposal facility (Figure 5-2)."

COMMENT: Page 5-17, Section 5.5.1.1: Add packaging to the systems requirements list.

RESPONSE: Agree - Text revised to include packaging and shipping method.

COMMENT: Page 5-21, Section 5.5.4: The off-site disposal location assumed for cost estimating purposes needs to be defined.

RESPONSE: Noted - The off-site disposal location assumed for cost estimating purposes is defined in section 3.5.1.

COMMENT: Page 5-22, Section 5.6.1: The use of Silo 3 or Silo 4 will affect the cost of this alternative. One or more of the other options should be selected and then the alternative developed. If one option cannot be selected at this time, it may be appropriate to develop two separate alternatives.

RESPONSE: Noted - The cost for this alternative was not fully developed as the alternative was rejected in the initial screening.

COMMENT: Page 5-32, Section 5.6.1.1: Short-term storage (if Silo 3 used) and transfer facilities (if Silo 4 used) should be included in the systems requirement list.

RESPONSE: Agree - Text revised to include waste transfer system. It should be noted that Silo 4 will used for temporary storage if Silo 3 is used for the remediation.

COMMENT: Page 5-23, Section 5.6.1.1: Waste from hydraulic removal must be added to the list.

RESPONSE: Noted - The hydraulic removal system water will be recycled within the system (i.e. sent back to the mining head), therefore there will not be a wastewater stream.

COMMENT: Page 5-23, Section 5.6.1.6: The short-term risk associated with this alternative should be reviewed. It seems that the short-term risk associated with packaging would be greater than for transferring the material between silos.

RESPONSE: Noted - This alternative does not require packaging as stated in the packaging requirements section. The waste will be held in temporary storage in Silo 4.

COMMENT: Page 5-24, Section 5.6.2.2: See comment for 5.6.2.1 above.

RESPONSE: Noted - See response for comment above.

COMMENT: Page 5-25, Section 5.7.1: Silo 3 wastes are described as more dry than that wastes in Silos 1 and 2. The effects of moisture content on removal needs to be discussed.

RESPONSE: Agree - Text revised to state "...The removal methods, related air and water treatment systems, EIE, and tumulus design for this alternative are similar (except for the differences in moisture content) to those for Alternative 3 and will not be discussed here."

COMMENT: Page 5-28, Section 5.7.1.4: A 12-acre area is required for on-site disposal of Silo 3 wastes; yet for Silos 1 and 2. 15 acres is required. Although the volumes have not been defined, the 15 acres seem small.

RESPONSE: Noted - The tumulus capacity is not directly proportional to its covered acreage. The geometry of the design is such that the tumulus capacity increases much more than the acreage covered as the tumulus base dimensions increase.

COMMENT: Page 5-28, Section 5.7.1.5: A container has been selected for cost estimating purposes. The container, material, and package retrievability should be discussed.

RESPONSE: Agree - Text revised to state "...For cost estimating purposes an approved, LSA-type, steel container has been chosen."

COMMENT: Page 5-33, Section 5.8.1.5: No data has been presented to indicate the contamination of the silo berm material. This needs to be included to properly evaluate the alternative.

RESPONSE: Agree - Text revised to state "...One choice for this is the silo berm material as it might be slightly contaminated requiring disposal."

COMMENT: Page 5-35, Section 5.8.4: The costs should be checked. In alternative 4, the difference for one silo (Silo 3) was $16 million. It would seem that the off-site disposal of two silos (Silo 1 and 2) in the same type of containers might be more than a difference of $5 million.

RESPONSE: Noted - The costs have been checked and found to be as indicated.

COMMENT: Page 5-33, Section 5.8.1.6: The list should include (1) any equipment too contaminated to warrant decontamination, and (2) wastewater from precipitation.

RESPONSE: Agree - Text revised to include any equipment too contaminated to warrant decontamination. Precipitation, however, is not expected within the EIE. The runoff from the outside of the enclosure will be diverted from the area and should not be contaminated.

COMMENT: Page 5-44, Section 5.10.1.6: The list should include wastewater from precipitation.

RESPONSE: Noted - See response above.

COMMENT: Page 6-1, Section 6.1: It is not clear that Alternative 5 has been screened out in accordance with the NCP. Section 300.430(e)(7) provides that alternatives may be eliminated on the basis of that it is not effective, technically or administratively infeasible or that would require equipment, specialists, or facilities that are not available within a reasonable period of time.

RESPONSE: Noted - Alternative 5 was screened out in accordance with 40CFR100.430(e)(7)(i)(Effectiveness) because there were alternatives that were found to be more effective. The text has been changed to represent this fact.

COMMENT: Page A-2, Section A.1, Paragraph 1: Section 120(a)(2) of CERCLA states that DOE must...in the same manner and to the extent as such guidelines, rules, regulations, and criteria are applicable to other facilities...at least not inconsistent.

RESPONSE: Accept - Text revised to eliminate first sentence of paragraph.

COMMENT: Page A-2, Section A.1, Paragraph 2: Applicable requirements are those federal and state requirements that specifically address a hazardous substance, pollutant, contaminant remedial action, location or other circumstances found at a CERCLA site (300.400(e)). Consider changing first sentence as above to be accurate.

RESPONSE: Agree - Text revised to state "...Applicable requirements are those federal and state requirements that specifically address a hazardous substance, pollutant, contaminant remedial action, location or other circumstances found at a CERCLA site, per NCP at 300.400(e)(Permit Requirements)."

COMMENT: Second Sentence: Add Solid Waste Disposal Act required by 121(d)(2)(A)(1).

RESPONSE: Agree - Text revised to include Solid Waste Disposal Act (SWDA).

COMMENT: Third Sentence: Relevant and appropriate requirements are those federal and state human health and environmental requirements that apply to circumstances sufficiently similar to the release or remedial action contemplated (relevant) and are well-suited to the site (appropriate). 300.000(o).

RESPONSE: Agree - Text revised to state "...Relevant and appropriate requirements are those federal and state human health and environmental requirements that apply to circumstances sufficiently similar to the release or remedial action contemplated (relevant) and are well-suited to the site (appropriate), per NCP at 300.400(g)(Identification of Applicable or Relevant and Appropriate Requirements)."

COMMENT: Fourth Sentence: Recommend deleting this sentence which seems contradictory with final sentence in paragraph.

RESPONSE: Agree - Text deleted.

COMMENT: Page A-8, Table A-1: The National Emission Standards for Radon Emissions for U.S. DOE facilities. 40CFR61, Subpart Q (54 Federal Register 51701).

RESPONSE: Agree - Text revised to include ARAR mentioned above.

COMMENT: Page A-10, Table A-1: Ohio regulations will be analyzed for status as ARARs as they are applied to the alternatives. That is, that they are promulgated (of general applicability and legally enforceable), identified by the state in a timely manner (300.515(d)(2) and (h)(2)), and more stringent than federal requirements and therefore are potential ARARs. The NCP at 300.515(d)(3) provides that at the RI/FS report stage notification of determination of waivers or disagreements with the state as to the status of any state ARAR will be made.

RESPONSE: Agree - Text revised to state "...Ohio regulations will be analyzed for status as ARARs as they are applied to the alternatives. That is, that they are promulgated (of general applicability and legally enforceable), identified by the state in a timely manner (300.515(d)(2) and (h)(2)), and more stringent than federal requirements and therefore are potential ARARs."