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**RESPONSE TO USEPA AND OEPA COMMENTS ON
THE SEPTEMBER 1990 INITIAL SCREENING OF
ALTERNATIVES FOR OU3**

11-21-90

**ASI/DOE-ORO
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REPORT**

**RESPONSE TO U.S.EPA
AND OEPA COMMENTS**

**ON THE SEPTEMBER 1990
INITIAL SCREENING OF
ALTERNATIVES FOR OU3**

November 21, 1990

FERNALD RI/FS OPERABLE UNIT 3
INITIAL SCREENING OF ALTERNATIVES
RESPONSE TO OCTOBER 24, 1990
USEPA/OEPA COMMENTS

GENERAL COMMENTS

1. General
OEPA/No. 1
COMMENTS:

It is somewhat difficult to determine what DOE has included in this operable unit. It appears that the scrap metal piles are included, but the drums stored on Plant 1 Pad, Thorium Building and other areas are not. Although Ohio EPA has negotiated a proposed schedule for characterization of these drums under RCRA, it is not clear how this material will be handled in the RI/FS process. How will these waste drums be evaluated, treated and disposed if they are not part of Operable Unit 3?

RESPONSE:

Section 1.4.1 describes Operable Unit 3. Drums stored on site are not included within this operable unit. The evaluation, treatment and disposal of the drums of mixed waste will be addressed through DOE's ongoing RCRA Feasibility Study relative to on site mixed waste treatment. Drums characterized as containing low level radioactive waste will be treated using existing FMPC process equipment and transported to the Nevada Test Site.

2. General
OEPA/No. 2
COMMENTS:

The document fails to address the question of how much of the waste is mixed waste or will be mixed waste after treatment. This is very important information for selecting alternatives since no facility is currently approved to accept mixed waste. Wastes which are either hazardous or radioactive, but not both, can be disposed of off-site in an approved pre-existing facilities. Mixed wastes cannot be readily disposed of off-site thus possibly limiting available alternatives for a portion of the waste stream. When possible, all treatment and excavation should be aimed at limiting the quantities of mixed waste produced.

RESPONSE:

DOE is fully aware of the mixed waste vs. hazardous waste disposal issue, as well as, the concept of waste minimization. Mixed waste will be identified and incorporated into this report once it becomes available. Process options selected will permit estimates of residual waste quantities.

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3. General
USEPA/McCord - No. 1
COMMENTS: The ISA states that currently U.S. DOE lacks sufficient remedial investigation (RI) information to adequately screen alternatives due to the schedule established in the Consent Agreement. U.S. DOE committed to the deadlines imposed by the 1990 Consent Agreement. The lack of information exists because U.S. DOE has not yet performed enough field work. Preparing a document to meet a milestone date, when the site has not been sufficiently characterized to sufficiently develop alternatives, is not consistent with the RI/FS process and does not fulfill the purpose of the ISA document or the Consent Agreement.
- RESPONSE:** Data acquisition and waste characterization are ongoing based on schedules established in the Consent Agreement which require submittal of the Operable Unit 3 ISA by September 24, 1990 and the Remedial Investigation Report by April 8, 1991.
4. General
USEPA/McCord - No. 2
COMMENTS: The number of alternatives retained for detailed analysis is too limited. Excluding the no action alternative, only two alternatives are carried forward to the detailed analysis of alternatives for 4 of the 6 suboperable units. The only difference between the two alternatives carried forward to the detailed analysis of alternatives for these 4 suboperable units is the location of the disposal facility. The total volume of contaminated soil for these 4 suboperable units represents over 65 percent of the contaminated soils in Operable Unit 3. The two alternatives for these 4 suboperable units consist of removal, treatment, and disposal. Additional alternatives could have been developed if various treatment, stabilization, and non-treatment technologies were considered.
- RESPONSE:** Data available at the time was sufficient to select general technologies. Accumulation of additional sampling data may impact the selection of treatments which can be developed in the remedial design process, but is not likely to change the alternative technologies retained for detailed analysis. The treatment, stabilization, and non-treatment technologies are still being considered for all of these alternatives.

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5. General
USEPA/McCord - No. 3

COMMENTS: RI information is still being collected that could significantly impact the development of alternatives. This data includes the results of the structural analysis of buildings, contamination of the buildings themselves, engineering properties of soils, characterization of material in containers, analysis for non-radiological contaminants, and treatability study investigations. The results of these investigations must be considered and reported in the detailed analysis of alternatives report.

RESPONSE: Much of the above-mentioned analysis will be performed during the conceptual design of the remedial alternatives. For example, the structural analysis of facilities such as Plant 2/3 will be initiated this fiscal year as part of the DOE Conceptual Design Report process. Results of individual building/plant structural analysis will be incorporated in future RI/FS documents where applicable. The treatability study work plan for Operable Unit 3 is under development.

6. General
USEPA/McCord - No. 4

COMMENTS: The report is not consistent with the alternatives presented. For example, Alternative pairs 3/4, 5/6, 7/8, and 13/14 are identical except one alternative considers on-site disposal where the other considers off-site disposal. However, Alternatives 9, 10, and 12 considers both on- and off-site disposal within each alternative. This inconsistency should be reconciled.

RESPONSE: Alternatives 9, 10, and 12 address disposal as discharge of treated groundwater to the Great Miami River. The disposal of the treatment residue would be consistent with the waste disposal of the remaining suboperable units.

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7. General
USEPA/McCord - No. 5
- COMMENTS:** All alternatives described in Chapter 4 that include treating excavated soils consider either soil washing, chemical extraction, or hydrocyclonic separation. However, other treatment technologies applicable to contaminated soils (i.e., thermal treatment and stabilization) were not screened from further consideration in Chapter 3 and must be considered.
- RESPONSE:** These technologies are being considered as part of the total treatment flow. The process flow of the treatment will be developed in the detailed analysis of alternatives.
8. General
USEPA/McCord - No. 6
- COMMENTS:** The rating of 5 for constructability, reliability, maintainability, and special engineering under the no action alternatives for each suboperable unit is extremely misleading. These categories should receive a not applicable or zero rating. For example, the rating of 5 for reliability associated with no action is inappropriate, if no action was at all reliable there would be no need for any further action.
- RESPONSE:** Disagree. The implementability factors have received ratings of 5s because of the overall ease of implementing the no action in comparison to the implementation of the other alternatives.
- The inability of the No Action alternative to solve the problem of contamination is reflected in the long-term effectiveness and reduction in toxicity, mobility, or volume rankings for this alternative (these three factors score 1s).

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9. General
USEPA/McCord - No. 7
- COMMENTS:** U.S. EPA is establishing a guideline that treatment as part of CERCLA remedies should generally achieve reductions of 90 to 99 percent in contaminant concentration or mobility of individual contaminants of concern. This guideline does recognize that a reduction of mobility or toxicity below 90 percent may achieve health based or other site specific remediation goals. The analysis of the reduction in mobility, toxicity, or volume is typically completed during treatability studies prior to the detailed analysis of alternatives. The results of the treatability studies and the analysis of significant reduction in mobility, toxicity, or volume should be considered and reported in the detailed analysis of alternatives report.
- RESPONSE:** Please supply appropriate documentation outlining the "proposed treatment guideline." Once the treatability studies are completed, the results will be incorporated into the FS. These studies will include groundwater testing, soil testing, and leachability testing.
10. General
USEPA/McCord - No. 8
- COMMENTS:** The ISA report does not identify volumes or areas of media for which general response actions may apply until late in the ISA report (i.e., step 6). This approach is not consistent with U.S. EPA guidance (OSWER Directive No. 9355.3-01). This apparently caused the technology types and process options to be screened without considering site specific information. Insufficient screening resulted in alternatives with nonspecific remedial actions. For example, most alternatives carried through to the detailed analysis of alternatives consist of removal, treatment, and disposal. This type of remedial alternative could have been selected for detailed analysis without the screening process. Additional screening will need to take place prior to initiating the detailed analysis of alternatives.
- RESPONSE:** The presentation of the volumes and areas of media was located with Chapter 6 to assist the presentation of the alternative screening. The volumes and areas were considered during the screening of technology types and process options. Additional process option screening will continue based upon updated RI information.

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SPECIFIC COMMENTS

11. Page ES-1, first paragraph, Page 1-1, first paragraph.
OEPA/No. 1
COMMENTS: The FMPC is indicated to be located approximately 18 miles northeast of downtown Cincinnati, Ohio. The Draft Remedial Investigation Report for Operable Unit 4, August 1990, indicates both 15 miles and 20 miles northwest of Cincinnati. Is 18 miles correct as stated?
- RESPONSE:** Agreed. 18 miles is correct as stated.
12. Page ES-5, General Comment.
OEPA/No. 2
COMMENTS: In several places it is stated that an objective is to prevent "concentrations from exceeding 2.5×10^5 to 2.5×10^7 cancer risk. First, no basis for this objective is given. Second, it seems misleading to state a range here since the statement actually means a value of 2.5×10^5 must not be exceeded. This comment is applicable whenever this type of statement is made in the report, such as page 2-7, etc.
- RESPONSE:** We have clarified the risk-based Remedial Action Objectives to reflect proposed RCRA Subpart S regulations. These regulations indicate the point of departure is 10^{-6} , however, we stressed in the report that the preliminary goal for all constituents, from all pathways and operable units is 10^{-4} .

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13. Page ES-6.
USEPA/McCord - No. 9

COMMENTS:

The ISA states that decontamination of buildings is not to be considered a remedial action under Operable Unit 3. This issue was discussed on U.S. EPA's September 10, 1990, letter. U.S. DOE can not arbitrarily exclude portions of the site from the remedial response action. This issue is raised again on page 1-11. Other regulatory programs such as RCRA closures, waste characterization, overpacking of drums, UST, and SPCC are Applicable or Relevant and Appropriate Requirements (ARARs) for the CERCLA response actions. All areas within this Operable Unit must be addressed in the revision of the ISA and all other documents for this operable unit.

RESPONSE:

At the time the ISA was issued, all of the areas DOE considered within the scope of Operable Unit 3 were addressed. If additional areas are placed in Operable Unit 3's scope, additional sampling will be required for the site characterization which would result in a delay to the FS.

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14. Page ES-6, first paragraph, first and second sentences.

OEPA/No. 3

COMMENTS:

DOE is using incorrect terminology when they state that perched groundwater will be discharged or treated to level consistent with ARARs. For a compound that does not have an MCL (which would be an ARAR), other criteria, advisories, or guidance may be used to develop acceptable levels for discharging contaminated groundwater. These levels constitute criteria "to be considered," (TBC) rather than ARARs. As such, the determination of whether extracted groundwater would need to be treated or could be directly discharged would be based on both the ARARs and TBCs.

RESPONSE:

Agreed. TBCs are added to Chapter 2 and other appropriate locations.

15. Page ES-7, third paragraph.

OEPA/No. 4

COMMENTS:

The factors of implementability considered for the screening evaluation should also include items related to administrative feasibility such as: availability of on-site/off-site treatment, storage, and disposal services, availability of equipment, and availability of design, operating and support personnel. Some of these are outlined with each alternative, but they should all be introduced here.

RESPONSE:

Disagree. This Initial Screening of Alternative considered the factors of implementability as summarized in third paragraph of page ES-7 and detailed in Chapters 5 and 6. The specific factors detailed above will be addressed in the Detailed Analysis of Alternatives.

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16. General Chapter Comments.
OEPA/No. 118

COMMENTS: Results of this initial screening of alternatives should be revised, if necessary, after further information is determined through the RI/FS process. The following sections reference missing data that need to be incorporated in future revisions of the screening of alternatives:

Page 1-28, Section 1.4.6.1, third paragraph.

Page 1-31, Section 1.4.6.2, third paragraph.

Page 3-1, Section 3.0, first paragraph.

Page 4-1, Section 4.0, second paragraph.

Page 6-73, Section 6.6, first paragraph.

Page 6-78, Section 6.6.2.3.1, first paragraph.

Page 7-1, Section 7.1, second paragraph.

Page 7-3, Section 7.2.1, third paragraph.

Page 7-7, Section 7.2.2, third paragraph.

RESPONSE: Agreed. It has always been the intent to include any new data available when revising the report.

17. Section 1.3.1, Page 1-10, Para. 1.
USEPA/McCord - No. 10

COMMENTS: All process buildings that were involved in handling, storage and process of pitchblende ore and yellowcake should be identified as suspect for radium contamination. All hazardous substances suspected to have contaminated buildings and other facilities within the production area must be identified.

RESPONSE: This sentence is added at the end of the paragraph: "The facilities involved in the handling, storing, and processing of pitchblende ore and yellowcake were Plant 2/3 (west end), the metals dissolver, the hot raffinate building, Plant 1, and possibly Plant 8.

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18. Section 1.4.1, Page 1-11, Para. 3.
USEPA/McCord - No. 11

COMMENTS: **The assumption of the Operable Unit #3 study is that compliance with other environmental programs will be adequate to address all the environmental concerns within the Operable Unit is incorrect. As previously stated, other regulatory programs are ARARs in the CERCLA remedial and removal process. See U.S. EPA's letter dated September 10, 1990.**

RESPONSE: The context of paragraph 3, page 1-11 of section 1.4.1 is written to inform the reader that there are previously established plans, including: WMCO's RCRA Closure; Spill Prevention Control and Countermeasure; and Best Management Practices, to address those activities that are necessary for facilities, underground storage tanks, aboveground drums, buildings, and repairs to active underground piping. It is not DOE's intent that these activities are exempt from regulatory compliance. DOE has maintained active management of the plant facilities and plans cited above are still legally applicable and are being enforced by DOE, the EPA and the Ohio EPA.

The decommissioning or demolition of plant structures represents an action that could generate potential releases to the environment. At the time this decision is made, DOE shall comply with the provisions of CERCLA, the NCP and the Consent Agreement.

DOE shall provide further information to the EPA concerning the definition of Operable Unit 3 in a formal response to the EPA letter dated September 10, 1990.

The text is revised accordingly.

19. Page 1-11, Section 1.4.4, last paragraph.
OEPA/No. 5

COMMENTS: **The flagpole area near the old administration building that once existed at the north end of the FMPC should be included as a suspect area for Operable Unit 3.**

RESPONSE: The flagpole area near the old administration building has been included in the initial flagpole suspect area. Figure 1-5 includes the location of this area.

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20. Section 1.4.1, Page 1-12.
USEPA/McCord - No. 12

COMMENTS: Suboperable Unit E must include drummed materials. Suboperable Units C and D should include loose (removable) surface contamination on or within facilities, or else should justify why this is not a potential release point.

RESPONSE: Suboperable Unit E does not include drummed materials as explained in Response No. 1 (OEPA #1). Suboperable Unit C does not include surface contamination on or within facilities as explained in Response No. 18. Suboperable Unit D, however, includes surface contamination on or within facilities in conjunction with facility removal Alternatives 13 and 14. This is explained in Sections 4.2.13 and 4.2.14.

21. Section 1.4.1, Page 1-12, Para. 3.
USEPA/McCord - No. 13

COMMENTS: Additional description of the suboperable units is needed. This description should include the location of each area, nature of contamination in each area, volume of contaminated materials, and potential risk to human and environmental receptors. This additional detail is necessary to allow for an independent evaluation of the adequacy and accuracy of the screening presented in the report. This information can be presented as a summary of the RI findings and attached and appendix.

RESPONSE: Disagree. This information is detailed in the subsequent chapters of the ISA.

22. Page 1-13, Section 1.4.2, first bullet, Main Substation and Garage.
OEPA/No. 6

COMMENTS: Main substation is not identified on Figure 1-4.

RESPONSE: Agreed. Identification is added.

23. Page 1-15, first bullet.
OEPA/No. 7

COMMENTS: The Decontamination and Decommissioning facility is not indicated on Figure 1-4.

RESPONSE: Agreed. Figure 1-4 is changed to include the Decontamination and Decommissioning facility (Building 69) on the decontamination pad.

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24. Tables 1-1, 1-2, 1-3, 1-4.
USEPA/McCord - No. 15
COMMENTS: Technetium 99 is not listed as a "potential" contaminant in any of the facilities. Tc-99 is a common contaminant associated with UF6 feed materials from recycled uranium. Because of high mobility, Tc-99 could affect soils and groundwater.
- RESPONSE:** Agreed. Tc-99 is added as a potential contaminant of concern where appropriate.
25. Page 1-19, Table 1-2.
OEPA/No. 8
COMMENTS: The list for Plant 2/3 should include all compound types listed in the text at the top of page 1-17.
- RESPONSE:** Agreed.
26. Table 1-2, Page 1-19.
USEPA/McCord - No. 14.
COMMENTS: Plant 2/3 may have potential radium contamination based upon past pitchblende and yellowcake operations. This should be included or else justification provided why radium is not a contaminant.
- RESPONSE:** Agreed. See Response #17.
27. Page 1-19, third line.
OEPA/No. 9
COMMENTS: Typo "Cadmium(s)."
- RESPONSE:** Agreed.
28. Page 1-20, third paragraph.
OEPA/No. 10
COMMENTS: It is important to note how the drummed solvents, lubricants, and gas cylinders are stored, and on what type of pad. What type of containment is in use?
- RESPONSE:** The last sentence in this paragraph is rewritten to read: "Drummed solvents, lubricants, gas cylinders, and oils are presently stored in a drum rack on a pad located north of the maintenance building. The pad has no curb or sump for containment."

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29. Page 1-22, Table 1-3.
OEPA/No. 11

COMMENTS:

Paragraph 1 on page 1-21 indicates that chlorinated organics were detected at elevated concentrations outside the southeast corner of Plant 9. Why aren't these compounds included under Plant 9 in Table 1-3? Are these compounds included with machine oils and solvents? A better distinction is needed between solvents, machine oils and solvents, degreasing solvents, and organics associated with machinery and cutting oils, listed as expected or potential types of contamination in Tables 1-1, 1-2, 1-3, and 1-4.

RESPONSE:

Contaminants identified in the text are added to the table. The generic categories of oils and solvents are based on known past operations. Specific compounds will be identified from the results of the RI.

30. Page 1-23, Table 1-4.
OEPA/No. 12

COMMENTS:

An explanation of what constituents compose "Q-11 ore" should be provided to allow the reader to better assess potential contaminants associated with this ore. An explanation should also be provided on how "RCRA Sampling Activities" could contribute potential contaminants to the production area and what contaminants these activities could contribute.

RESPONSE:

Q-11 ore is the Westinghouse code name for pitchblende ore. This is explained. The "RCRA sampling activities" are excavated soils suspected to be RCRA waste. They are stored in the chemical warehouse until RCRA classification has been verified.

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31. Page 1-24, second paragraph.

OEPA/No. 13

COMMENTS:

Even though samples from Mound 1 have shown no contamination in the rubble or soils beneath the rubble, groundwater samples from Well 1032 which is placed in the rubble mound had the highest levels of uranium contamination ($>190 \mu\text{g/l}$) found in the 1000 series wells and reported in the RI report for Operable Unit 4. Although this well is down-gradient of the K-65 silos, there is still a potential that some of the contamination found in Well 1032 resulted from historical leaching of materials from the rubble pile.

RESPONSE:

Samples were analyzed from two different locations: Trenching in the rubble mounds and Well 1032. The results (Initial RI characterization data) determined that low levels (below action limits) of uranium were discovered in the rubble mound. Once the RI establishes the source of the contamination in Well 1032, this information will be added to the FS.

32. Page 1-24, second paragraph.

OEPA/No. 14

COMMENTS:

Given that no evidence of rubble was found at the rubble mound 2 suspect area, does this mean that suspect area was located by Plant operation history, or another method? The third rubble mound is stated to be the only rubble mound that has shown uranium contamination. It is also stated that samples from mound number one have shown no contamination in the rubble or the soils beneath the rubble. However, it is unclear whether samples were taken in the vicinity of the rubble mound 2 suspect area in order to justify this statement.

RESPONSE:

Agreed. The following statement is added, "Initial Scoping of Operable Unit 3 identified the site of rubble mound 2 as a suspected rubble mound (from site worker testimonies). Although still identified as a rubble mound in this report, physical inspection at the location of rubble mound 2 (south of the K-65 slurry line) has shown no evidence of rubble. This site is most likely the location of a previous spill from the K-65 slurry line. Initial RI data shows radiological contaminants in all three mounds. Mounds 1 and 2 are below acceptable levels. Mound 3 is above acceptable levels. In addition, all three mounds have inorganic and volatile organic contamination. In mound 1, additional semi-volatile organics and cyanide were discovered. Upon completion of the RI characterization, this information will be incorporated into the Feasibility Study."

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33. Section 1.4.4.
USEPA/McCord - No. 17
COMMENTS: **The discussion concerning the nature and extent of contamination associated with the suspect areas is not supported with specific information from the field investigations.**
- RESPONSE:** Additional characterization information concerning the nature and extent of contamination is provided in the appropriate sections of this report.
34. Section 1.4.4, Page 1-24, Para. 3.
USEPA/McCord - No. 16
COMMENTS: **Radon and other hazardous substances must be measured in the K-65 slurry lines.**
- RESPONSE:** Work to determine the nature and extent of contamination external to and along the K-65 slurry lines remains to be completed. A work plan is being prepared addressing the additional sampling and analysis required.
35. Page 1-24, fourth paragraph.
OEPA/No. 15
COMMENTS: **The results of the July 1990 FMPC Outfall Pipeline Investigation, Gravel Pack Study and Integrity Testing Final Report should be included in this section.**
- RESPONSE:** Agreed. The second sentence is modified to read: "Testing to date has indicated no contamination; however, Westinghouse testing of the line has discovered two possible dislocated joints between Manholes 179 and 180. It is proposed that the line be repaired through the insertion of a sealing liner."
36. Page 1-27, first paragraph.
OEPA/No. 16
COMMENTS: **The last sentence of this paragraph should be separated into two sentences in order to make better sense.**
- RESPONSE:** Agreed.

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37. Section 1.4.5, Page 1-27, Para. 1.
USEPA/McCord - No. 18
COMMENTS: **The results of the non-radiological contamination investigation is necessary before conducting the detailed analysis of alternatives.**
- RESPONSE:** Agreed. The RI information to date is included.
38. Page 1-27, second paragraph, fifth bullet.
OEPA/No. 17
COMMENTS: **A discussion should be provided as to whether the current non-production status of the FMPC will affect the number of buildings designated for demolition. If production will no longer occur at FMPC and environmental restoration is the goal, buildings with serious contamination beneath them should be considered for demolition so complete remediation of any contaminated soils can be performed.**
- RESPONSE:** The status of the FMPC will not affect the number of buildings designated for demolition. The existing facilities highlighted in SU-D are the only facilities currently planned to be removed.
39. Page 1-28, last paragraph.
OEPA/No. 18
COMMENTS: **This paragraph references "contamination above 200 ppm" in two places without stating the contaminant. It is assumed the reference is to uranium contamination, but it should be stated in the paragraph.**
- RESPONSE:** Agreed. "Total uranium" is inserted before "contamination".
40. Table 1-5, Page 1-29.
USEPA/McCord - No. 19
COMMENTS: **General categorization of all levels below 50 ppm uranium makes it impossible to consider cleanup at a lower level, or to estimate the extent of contamination or waste volumes for ALARA purposes, and is thus premature at this point.**
- RESPONSE:** Labeling DOE's use of benchmark cleanup levels as "premature" is inconsistent with USEPA and OEPA requests for volumes of contaminated soils to be removed. It would be impossible to estimate, with any degree of accuracy, the volumes of material without a cut-off level.

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41. Page 1-30, Table 1-6.
OEPA/No. 19
COMMENTS: Detection limits should be provided for the radio-isotopes so the reader may better judge what is considered as "No Radioactive Elements Identified." This is especially true for isotopes other than uranium since the cleanup levels determined for them may be lower than the suggested 50 ppm for uranium in soil.
- RESPONSE:** RI data is incorporated, actual levels are provided in each category where applicable, and detection limits are added where appropriate in the table.
42. Table 1-6, Page 1-30.
USEPA/McCord - No. 20
COMMENTS: Levels of 150-200 ppm radium identified in the drum area appear to be in the wrong units since this would correspond to .15-.2 millicuries per gram of radium. Also, the use of the term "no radioactive elements identified" should be explained giving sensitivities of measurements, etc.
- RESPONSE:** The actual sample in the Drum Baling Area was 105 pCi/g of Radium-228. Table 1-6 is changed to reflect this and other current data.
43. Page 1-30, Table 1-6.
OEPA/No. 20
COMMENTS: Text of page 1-28 indicates full radiological testing has not been completed for all samples taken in Operable Unit 3. This should be clearly presented on Table 1-6. It is unclear if "no radioactive elements identified" may be synonymous with "not analyzed."
- RESPONSE:** Disagree. Additional sampling throughout OU3 has occurred, but results have not been obtained from the labs. Table 1-6 is updated to reflect current radioisotope data.
44. Page 1-31, 1.4.6.2, second bullet.
OEPA/No. 21
COMMENTS: Typo "less that" should be "less than."
- RESPONSE:** Agreed.

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45. Table 1-7, Page 1-32.

USEPA/McCord - No. 21

COMMENTS: The use of the category "less than 10,000 micrograms per liter" (uranium) should be clarified, since this is several order of magnitude greater than the proposed cleanup level for water.

RESPONSE: Text is added. "Table 1-7 details sample locations and ranges of uranium contamination in the perched groundwater. The areas defined do not signify all contaminated locations, but rather a representation. The numbers used for ranges signify quantities of uranium contamination and have no reference to the clean up level of 30 $\mu\text{g/l}$."

46. Page 2-1, last paragraph.

OEPA/No. 22

COMMENTS: The phrase "by reducing the radiological and hazardous substances for the site to as low as reasonable achievable" is poorly worded, and makes no apparent sense.

RESPONSE: Sentence is changed to read: "...the environment by reducing concentrations of radiological and hazardous substances from the site to an acceptable health-based level,..."

In addition, the term "as low as reasonably achievable" or ALARA" is a common term in radiation health standards, however we will explain the term in context whenever we find it useful in the text.

47. Page 2-4, third paragraph.

OEPA/No. 23

COMMENTS: The point of compliance should be considered to be the nearest actual or potential receptor location (under current or future use scenarios) for each exposure pathway, not just the nearest identified receptor location. As stated in the fifth paragraph, this means the compliance boundary would be the boundary of the waste unit.

RESPONSE: Points of compliance are clearly defined, and based on the new proposed RCRA Subpart S regulations.

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48. Section 2.1.1, Page 2-4, Para. 3.
USEPA/McCord - No. 22

COMMENTS: The point of compliance for each medium occurring in each suboperable unit should be explicitly stated. For ground water, remedial action objectives should be met throughout the contaminant plume; or where waste is left in place, the point of compliance is the edge of the waste management unit.

RESPONSE: The point of compliance for each medium is clarified. In general, proposed RCRA Subpart S regulations are used to define the points of compliance.

49. Page 2-5, third paragraph.
OEPA/No. 24

COMMENTS: USEPA no longer uses the term "cancer potency factor" in risk assessments. It has been replaced by the term "slope factor" to refer to carcinogenic risk.

RESPONSE: "Cancer potency factor" is replaced with the term "slope factor" to refer to carcinogenic risk.

50. Page 2-6, Table 2-1.
OEPA/No. 25

COMMENTS: Other TBCs such a MCLGs and proposed MCLs should be listed in this table.

RESPONSE: This issue is under review at this time; results of the study will be addressed in the next revision of the report.

51. Page 2-7, Table 2-2.
OEPA/No. 26

COMMENTS: The RAO for radionuclides for the perched groundwater media is poorly worded. Releases of radionuclides to the groundwater cannot be given in terms of the concentration of a single radionuclide (i.e., uranium).

RESPONSE: Release of radionuclides from the perched water to the groundwater can be given in radionuclide specific terms once the fate and transport modeling is complete.

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52. Page 2-8, top partial paragraph.
OEPA/No. 27

COMMENTS: While the acceptable cancer risk range specified in the NCP is 1×10^{-4} to 1×10^{-6} , the NCP also states that the 1×10^{-6} risk level shall be used as the point of departure for determining remediation goals when ARARs are not available or are not sufficiently protective. DOE does not appear to be considering 10^{-6} as the point of departure but is content to use anything that falls within the range while providing no justification for doing so.

RESPONSE: The issue of dose-based versus risk-based cleanup levels for radionuclides is still very undecided. A phone conversation with U.S. EPA Headquarters indicates this very issue is holding up release of the RAO guidance document. For non-radioactive chemicals, individual chemical specific RAOs are based on the 10^{-6} point of departure.

53. Section 2.1.4.1, Page 2-8 (and elsewhere in the document).
USEPA/McCord - No. 24

COMMENTS: The residual level of 35 picocuries per gram (pci/g) of uranium in soil is presented as "the acceptable residual concentration" through reference to the USNRC Branch Technical Position. The introduction of a cleanup level (or defacto cleanup level) at this point is premature. It should be made very clear that this level is only used as a benchmark or reference level for the purpose of estimating potential waste volumes.

The NRC Branch Technical Position is not final but only proposed. While it derives residual levels based upon 1 millirad lung and 3 millirad bone annual doses due to inhalation, which is conservative as far as U.S. EPA is concerned, it does not deal extensively with other pathways, and in particular, there is relatively high uncertainty as to what external exposure doses may result from these residual levels.

In addition, the Branch Technical Position derives residuals for other contaminants that depleted uranium, some of which should be considered for the FMPC. Levels of 30 pci/g for natural or enriched uranium (which has been processed at FMPC), 10 pci/g for uranium in equilibrium with all daughters (such as pitchblende ore also refined at FMPC) and for natural thorium (also refined and stored at FMPC), are all put forth.

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In addition, past work with pitchblende ore opens the possibility of radium contamination, some of which has been identified in Operable Unit 3. U.S. EPA has specified standards for cleanup of radium in soil which are codified at 40 CFR 192, which are ARARs.

Finally, the cleanup levels for this Operable Unit should be derived using combined risk of all radionuclide contaminants and hazardous substances as part of the Risk Assessment process. Following this, and prior to finalizing the remedial work plan, a studied application of the ALARA principle should occur, using RI data to do a cost benefit analysis. Until that time, it is premature to use any number as an acceptable residual for uranium in soil.

RESPONSE:

We agree that cleanup levels for radionuclides in surface soil can only be determined from a site-specific pathways analysis for acceptable remediation doses. To date the use of a concentration of uranium in surface soil of 35 pCi/g satisfied the need for a reference level for estimating the extent of contamination and for waste volume estimates.

The use of 35 pCi/g as a cleanup level for depleted uranium is based on the 1981 NRC Branch Technical Position on this subject. Application of the level has been made for several other sites (albeit not Superfund sites) throughout the U.S. The derivation of the level was based on several exposure pathways, including inhalation, ingestion and external exposure for standard exposure conditions and assumption.

Derivation of site-specific cleanup levels for soils in Operable Unit 3 will consider the above pathways as well as other pathways and other operable units. Allowable radiation doses must be determined from which clean up levels will be calculated. Efforts are underway to determine both Operable Unit and site media clean up goals.

Relevant and appropriate cleanup standards for radionuclides that are promulgated will be used.

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54. Section 2.1.4.1, Page 2-8, Para. 1.
USEPA/McCord - No. 23

COMMENTS: The statement that an RAO which must be applied across all media is that total cancer risk from radionuclides not exceed $2.5E-5$ is inconsistent with the individual RAO's listed in Table 2-2. In Table 2-2 the approximate risk level of $2.5E-5$ is reached by radon, and by other radionuclides, is probably exceeded by 35 picocuries per gram soil residual uranium, and is probably not exceeded through the water pathway. In any case, the total cancer risk across all media, clearly would exceed $2.5E-5$. This should be clarified.

RESPONSE: We have clarified the report to indicate that the point of departure for individual chemicals traveling via each medium is 10^{-6} , however, as stated in proposed RCRA Subpart S regulations, the total site risk should not exceed 10^{-4} .

55. Page 2-8, Section 2.1.4.1, second paragraph.
OEPA/No. 28

COMMENTS: Ohio EPA does not necessarily accept 35 pCi/g as an acceptable residual concentration for the FMPC site, regardless of where it has been used previously. Does this number represent a 10^{-6} lifetime cancer risk level?

RESPONSE: The 35 pCi/g level is a proposed clean up level for the site. It is necessary in the RI/FS process for remediation design engineers to work with a reference clean up level. We realize this proposed level may change.

56. Page 2-8, fourth paragraph.
OEPA/No. 29

COMMENTS: This section states if hazardous chemical contamination of soils without radiological contamination is discovered, it would typically be found in small quantities that could be packaged in 55-gallon drums and transported off or on site. This assumption should state that nonradiological sampling data are not yet completed in the southwest and southeast quadrants (page 1-28, third paragraph and page 1-31, third paragraph).

RESPONSE: Agreed. A statement that nonradiological sampling data is not yet completed is included.

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57. Page 2-9, first paragraph.
OEPA/No. 30

COMMENTS:

This section states that the RAOs for perched groundwater specify that future releases from the media to what media is not clear. In addition, the first sentence states that the potential for the constituents of the production area and suspect areas to enter the underlying Great Miami Aquifer sometime in the future is a great concern. Should past and/or current potentials for constituents to enter the Great Miami Aquifer be included?

RESPONSE:

The revised report will clarify that RAOs for perched groundwater have been based on transport modeling between the perched water and the groundwater. The perched water itself is not a "point of compliance" for groundwater RAOs, however, the aquifer is the point of compliance. Therefore, it is necessary to determine how contaminants in the perched water may affect the aquifer.

58. Page 2-9, second paragraph.
OEPA/No. 31

COMMENTS:

As mentioned by Ohio EPA in several comment letters on previous DOE submittals regarding EE/CA documents, a level of 30 $\mu\text{g/l}$ for uranium represents a carcinogenic risk outside of the 10^{-4} to 10^{-6} risk range and its use as a "functional MCL" is, therefore, questionable. Further, the NCP also states that the 1×10^{-6} risk level shall be used as the point of departure for determining remediation goals when ARARs are not available or are not sufficiently protective.

RESPONSE:

The 20 pCi/l (30 $\mu\text{g/l}$) cleanup level is a proposed level. It is similar to the level recently suggested by the U.S. EPA as a potential MCL. Understanding that the level may change, DOE will continue to use it as a reference clean up level for remedial design purposes.

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59. Section 2.1.4.2, Page 2-9, Para. 5.
USEPA/McCord - No. 25

COMMENTS: The 4 mrem/yr dose limit cited as attributable to 40 CFR 141.16 actually limits the dose to the whole body or to any organ to less than 4 mrem/yr, and as such is often more restrictive than is portrayed.

RESPONSE: We agree that the radiation dose limit of 4 mrem per year specified in 40CFR141.16 applies to the whole body or to any organ for beta- and gamma-emitting radionuclides. However, the derivation of an allowable concentration of 20 pCi/l was not based on the radiation dose from beta- and gamma-emitting radionuclides, but rather for alpha particle emitting radionuclides. In the absence of an MCL for Uranium, this method of deriving an acceptable level was based on a related standard. This method was considered appropriate at the time, but is under review.

60. Tables 2-3 and 2-4.
OEPA/No. 32

COMMENTS: FMPC action levels for previous initial screening of alternatives documents for other operable units have not been stated as 25% of the MCL or RFD. If this is the action level decided upon, uranium may no longer be the only contaminant of concern since levels of other contaminants are very likely to be above their respective action levels and require cleanup of areas not required under uranium guidelines.

RESPONSE: All FMPC RI/FS documents will reflect the preliminary RAO levels of 25% of the MCL or risk-based level. The Operable Unit 3 baseline risk assessment will identify any chemicals of concern that are found above the action level.

61. Page 2-13, second paragraph.
OEPA/No. 33

COMMENTS: USEPA risk assessment methodology uses a 70-year lifetime to calculate carcinogenic risks. Therefore, DOE's use of a 50-year committed effective dose equivalent is inconsistent with this methodology.

RESPONSE: The 50-year committed effective dose equivalent (CEDE) describes 50 years of effect from an annual intake. The DOE multiplies the 50-year CEDE by the required 70-year exposure period.

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62. Page 3-4, third paragraph.

OEPA/No. 36

COMMENTS:

This section describes a multilayer cap with a filter between the sand drainage layer and the upper vegetative layer. A specific type of filter should be identified here, such as a geotextile, geofabric, and/or a sand layer.

RESPONSE:

Agreed. The sentence is reworded to say the following: "The vegetative layer of the multi-layer cap is placed above the drainage layer, usually with a layer of filter fabric in between to prevent piping. Specific types of filter fabric will be assessed during conceptual design of the remedial action."

63. Section 3.1.3, Page 3-4, Para. 4.

USEPA/McCord - No. 26

COMMENTS:

The text states that temporary caps and sump repair and replacement will be retained for further evaluation. However, Figure 3-3 (Page 3 of 6) indicates it was not applicable for soils contamination; where as Figure 3-3 (Page 5 of 6) temporary caps are applicable to facility floors. The screening steps would be more clear if the text and Figure 3-3 were prepared for media within each suboperable unit.

RESPONSE:

A more specific statement is added to 3.1.3 stating the temporary cap is retained and applicable only to facility floors. Also, it is clarified that since sumps are located within or near facilities, sump repair/replacement is retained and applicable only to the near-term/far-term general response action.

64. Section 3.1.3, Page 3-4, Para. 4.

USEPA/McCord - No. 27

COMMENTS:

Figure 3-3 also does not match the text for in-situ vitrification.

RESPONSE:

Disagree. Clarify. In-situ vitrification is retained as a containment/stabilization process option. It is not applicable to excavated soils, otherwise it would not be in-situ.

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65. Page 3-10, fourth paragraph.
OEPA/No. 37
COMMENTS: This first sentence may be more appropriate it if reads: **grading is useful in helping control ponding, etc.**
- RESPONSE:** Agreed. The sentence is changed to read, "Grading is useful in helping control ponding, runoff velocities/soil erosion,..."
66. Page 3-11, Section 3.4, second paragraph.
OEPA/No. 38
COMMENTS: Typo "Jet-Educator" should be "Jet Eductor."
- RESPONSE:** Agreed. "Jet-Educator" is changed to "Jet Eductor."
67. Page 3-12, paragraph 2.
OEPA/No. 39
COMMENTS: It seems unlikely that highly permeable materials drain "relatively slow."
- RESPONSE:** Agreed. The sentence is rewritten to read: "Horizontal drains depend on the permeable nature of the native soil with high permeable materials suited best for this process. Generally, width spacing and depths of drains will vary depending on soil permeability and subsurface hydraulic grade lines. Dangers in excavating thick, saturated zones are caused by instability of sidewalls during construction of deeper trenches."
68. Page 3-12, third paragraph.
OEPA/No. 40
COMMENTS: "the saturated thickness...is typically less than 5 feet" should be more clearly identified as pertaining to the perched water zone.
- RESPONSE:** Agreed. The sentence is changed to read, "within the perched groundwater zone at the FMPC, the saturated thickness..."

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69. Page 3-15, Section 3.5.
OEPA/No. 41
COMMENTS: **Based on the GeoTrans report to the Ohio Environmental Protection Agency entitled "Review of Several Technologies to Remove Uranium From Groundwater At the Feed Materials Production Center, Fernald, Ohio" (September, 1990), Chemical Precipitation treatment should be included in this section (copy of report attached).**
- RESPONSE:** Agreed. Chemical Precipitation is added.
70. Page 3-17, second paragraph.
OEPA/No. 42
COMMENTS: **The last sentence reads: "Decontamination of a centrifuge...is a viable treatment process." The sentence should be reworded to say that centrifugation is a viable treatment process.**
- RESPONSE:** Agreed. The sentence is reworded to say that centrifugation is a viable treatment process.
71. Section 3.5.10, Page 3-19, Para. 2.
USEPA/McCord - No. 28
COMMENTS: **The report lists two types of adsorption processes (carbon and alumina); but only discusses carbon adsorption.**
- RESPONSE:** Agreed. A discussion of activated alumina adsorption is added to Section 3.5.10.
72. Page 3-20, Section 3.5.11.
OEPA/No. 34
COMMENTS: **The word "toluene" is misspelled in the second paragraph.**
- RESPONSE:** Agreed. The misspelling is corrected.

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73. Figure 3-3.
OEPA/No. 35
COMMENTS: **This single-layer cap listed as a potentially applicable solid waste general response action must comply with Ohio's landfill closure BAT regulations contained in Ohio Administrative Code (OAC) 3745-27 (specifically OAC 3745-27-08 and 3745-27-11(G)(1) through (G)(3).**
- RESPONSE:** Disagree. The single layer cap is retained only as a temporary interim action. It is not retained as a long term action. This will be clarified in Section 3.1.1 - discussion of single layer cap.
74. Page 3-20, second paragraph.
OEPA/No. 43
COMMENTS: **Methods of treating the volatile organics in the air after air stripping, such as granular activated carbon, should be included.**
- RESPONSE:** Agreed. The following sentence is added, "The contaminated air is then passed through an activated carbon filter to meet USEPA air emission standards.
75. Page 3-22, first paragraph.
OEPA/No. 44
COMMENTS: **"Chemical extraction uses chemicals to remove organic and volatile inorganic compounds from soils." Shouldn't this read: "inorganic and organic compounds?"**
- RESPONSE:** Agreed. Sentence is changed to read: "Chemical extraction uses chemicals to remove organic and inorganic compounds from soils."

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76. Figure 3-3, Electro-osmosis Process Option.

OEPA/No. 45

COMMENTS:

The Process Option electro-osmosis is stated to be screened out because it is not applicable to silts, clay-rich silts, or clay-rich sands, whereas Section 3.4.6, page 3-14, indicates that these soils can be drained with electro-osmosis in conjunction with well or wellpoints. This section states that the electro-osmosis process option was not retained for further evaluation because less sophisticated technology process options are available to effectively remove contaminated water from the purchase strata. Figure 3-3 should reflect this reasoning.

RESPONSE:

Agreed. Figure 3-3 screening comment is changed to read: "Not retained - effective and less sophisticated process options are available."

77. Figure 3-3, Stripping Process Option.

OEPA/No. 46

COMMENTS:

Only the air stripping process is described in this figure. Steam stripping should be included in this description or listed.

RESPONSE:

The description of steam stripping is added to the description list in appropriate boxes of Figure 3-3.

78. Figure 3-3, On-Site Waste Disposal Remedial Technology Type.

OEPA/No. 47

COMMENTS:

The description of the Permanent On-Site Disposal Facility Process Option repeats the option. It should state that the facility will be designed in accordance with 10CFR61 and 40CFR264.

RESPONSE:

The discussion of the permanent on-site disposal facility in Section 3.9.1 states that the facility will be designed in accordance with 10CFR61 and 40CFR264. Figure 3-3 is changed to read "Designed in accordance with 10CFR61 and 40CFR264."

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79. Figure 3-3, Stabilization Remedial Technology Type, Excavation, Treatment, Disposal Response Action.

OEPA/No. 48

COMMENTS: **Surcharging is stated to be screened out because this process option is not applicable for excavated soils, however, this process option was retained later in the figure within the "Near Term: Containment, Far Term: Excavation, Treatment, Disposal" response action. Is this correct?**

RESPONSE: It was not screened out. Since it is not applicable for excavated soils, it is shaded out for the excavation general response actions. It is, however, applicable in the near term containment action of the near term/far term response action.

80. Section 3.12.1, Page 3-30, Para. 3.

USEPA/McCord - No. 29

COMMENTS: **The anticipated date of completing the structural analysis and soils properties investigation should be stated. This information is pertinent to the feasibility study and should be included in the remedial investigation and feasibility study reports.**

RESPONSE: Soil investigations are continuing with the RI and are expected in the Draft in December. Structural analyses will be completed with the conceptual design of the remedial alternatives.

81. Page 4-4, first paragraph.

OEPA/No. 49

COMMENTS: **See previous comments regarding the use of 20 pCi/l as an allowable uranium criterion. It should also be kept in mind that this value is not a promulgated standard and, therefore, is not an ARAR; rather, it is a criteria "to be considered" (TBC).**

RESPONSE: We agree that the 20 pCi/l value is not an ARAR-based value since it is not based on a non-promulgated DOE standard. However, the 20 pCi/l value will continue to be used as a proposed groundwater cleanup level.

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82. Page 4-7, Table 4-2, Remedial Action Objectives, first bullet.
OEPA/No. 50
COMMENTS: **The concentration of total uranium should be in " $\mu\text{g/l}$ ", not " mg/l " as stated in the bullet. Also, see previous comments regarding the acceptability of 20 pCi/l as a remedial action objective for the site.**
- RESPONSE:** Agreed. 30 mg/l is changed to 30 $\mu\text{g/l}$. See response to Comment #81 (OEPA No. 49) for the acceptability of 20 pCi/l.
83. Page 4-9, Table 4-2.
OEPA/No. 51
COMMENTS: **As previously stated above, Ohio EPA does not necessarily accept 35 pCi/g as an acceptable remedial action objective for the FMPC site, regardless of where it has been used previously. Does this number represent a 10^{-6} lifetime cancer risk level?**
- RESPONSE:** The 35 pCi/g soil level is being used as a preliminary "acceptable level" at the FMPC. We are aware that this level may change.
84. Page 4-11, seventh paragraph.
OEPA/No. 52
COMMENTS: **It should be stated that the on-site disposal facility will be designed in accordance with 10CFR61 and 40CFR264.**
- RESPONSE:** Agreed. This statement is added to the discussions in Alternative 3, 5, 7, and 13.
85. Page 4-12, fifth paragraph.
OEPA/No. 53
COMMENTS: **This paragraph references the method of moving soils underneath facilities. It is stated to be described in Section 3.9.1.1, however, there is not a Section 3.9.1.1, but appears to be described in Section 3.12.1. Has this method of mechanical removal been implemented and proven effective during remediation at other sites?**
- RESPONSE:** The reference to 3.9.1.1 is changed to 3.12.1. No, to the best of our knowledge, this method has not been applied at Superfund sites, but it is a standard proven process for expansion and modification of existing facilities in construction.

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86. Section 4.2.7, Page 4-14, Para. 1.
USEPA/McCord - No. 30

COMMENTS: Covering facility floors with a temporary synthetic cap does not address the possibility of contaminant release from leaking underground pipes or sumps.

RESPONSE: Contaminant release from leaking underground pipes and sumps will be adequately addressed under the near term implementation of this alternative which also includes perched groundwater monitoring and continuation of the existing BMP and SPCC programs.

87. Chapter 6, general comment.
OEPA/No. 54

COMMENTS: Although the screening of technologies identifies 3 viable technologies for soil treatment, the alternatives do not reflect any impact of these technologies. For example, if contaminated soils could be treated to below action levels for all contaminants, then the treated soils could be used as fill on-site and would not require space in an engineered on-site/off-site disposal unit. This could have a large impact on the cleanup of this operable unit and should be considered.

RESPONSE: Agreed. However, this factor is addressed in the Detailed Analysis of Alternatives by considering a 70% reduction in soil volume through "cleaning" treatment, then a 30% increase in volume through stabilization and a 5% increase through miscellaneous job/work waste. This information should be available/finalized sufficiently to be included in the FS Report.

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88. Chapter 6, general comment.

OEPA/No. 55

COMMENTS:

The discussion and numerical rankings seem biased towards on-site disposal. The rankings lower the score for off-site disposal due to short-term environmental health, short-term environmental protection, and agency approval. However, no mention is made in the text or the ranking regarding:

- feasibility and geotechnical evaluation of on-site disposal;
- special engineering required for on-site disposal;
- maintainability and long-term monitoring for on-site disposal; and
- agency requirements required for on-site disposal.

It seems that these factors would tend to reduce the score of alternatives with on-site disposal.

RESPONSE:

Disagree. The above factors and their impacts are discussed on pages 6-6 and 6-7. (Other factors are contained in Parson's Design Study for EDF.)

89. Chapter 6, general comment.

OEPA/No. 56

COMMENTS:

The requirements for long-term maintenance and monitoring programs following the implementation of alternative remedial actions are not well defined for the selected alternatives in this evaluation.

RESPONSE:

Agreed. Additional requirements/information is provided in Chapters 3 and 6.

90. Page 6-2, Table 6-1.

OEPA/No. 57

COMMENTS:

Typographical error: "hydrachloric" under Suboperable Unit A should read hydrochloric.

RESPONSE:

Agreed.

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91. Page 6-2, Table 6-1.
OEPA/No. 58

COMMENTS:

Rubble mound 2 should also be included. (See comment #14).

RESPONSE:

Disagree. Table 6-1 is a list of "Contaminated Areas" - only if Rubble Mound 2 shows contamination above allowable levels should it be included.

92. Page 6-2, Table 6-1.
OEPA/No. 59

COMMENTS:

The following are additional deficiencies with Table 6-1. Why are the facilities themselves and miscellaneous abandoned equipment not included in any suboperable unit? Page 1-28 indicates that the south-central and north areas of Plant 6 contain soils with 17,000 ppm and 70,000 ppm of uranium, respectively. These areas are not included in Table 6-1. Page 1-28 also indicates that the sewage treatment plant area contains surficial soils with uranium levels above 220 ppm. This area is also not included in any suboperable unit in Table 6-1. Table 6-1 also does not include the area east of Plant 5 as does Table 1-5. Table 6-1 lists the area south of the garage and heavy equipment building, whereas Table 1-5 lists the area south of the garage and In-vivo building.

RESPONSE:

Disagree. However, review of Table 6-1 and Table 1-5 showed some inconsistency in description of contaminated areas; this is corrected. Facilities which are part of OU3 remedial action are listed in SU-D. The only abandoned equipment that is currently a part of OU3 are those in the drum baling area which is listed in SU-E.

Also, paragraph 1.4.6 is, as titled, a "General Description of Contamination" and is not meant to be all inclusive. As stated by the last sentence on page 1-28: "Chapter 6.0 provides a detailed discussion of the extent of soils contamination and sources". However, parts of page 1-28 and Table 6-1 are rewritten for consistency in identifying contaminated areas.

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93. Page 6-2, Table 6-1.
OEPA/No. 60

COMMENTS:

What criteria is DOE using to determine what areas are designated for demolition. Why aren't other buildings such as Plant 2/3 also included in this table? Please clarify.

RESPONSE:

The facilities that are designated for removal are based upon serious contamination under the facility. These buildings are highlighted in Suboperable Unit D. Plant 2/3 was not included in this category because it is proposed to be used as part of the site-wide remediation program.

94. Page 6-2, Table 6-1.
OEPA/No. 61

COMMENTS:

Plant 1 storage pad is included in Suboperable Unit A, although it is unclear from Figure 6-1, why this particular area has limited access to contaminated soils.

RESPONSE:

Plant 1 Drum Storage Pad is included in SU-A because of the large number of storage drums and the concrete pad which would have to be removed in order to gain ready access to the contaminated soil under the pad.

95. Figure 6-1.
OEPA/No. 62

COMMENTS:

The contaminated areas around Plants 5 and 8 are inconsistent with respect to Table 1-5 on page 1-29.

RESPONSE:

Disagree. Figure 6-1 is the correct representation of the contamination in the areas of Plant 5 and 8. Do not see the inconsistency.

NOTE: Table 1-5 is not meant to be all inclusive of contamination areas, whereas Table 6-1 is meant to provide more detail.

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96. Page 6-6, first paragraph.

OEPA/No. 63

COMMENTS:

Traffic flow through the community will not necessarily be greater with the off-site transportation of contaminated materials. Further, the use of rail shipments would yield less traffic flow particularly if shipments are timed to correspond with periods of low local traffic volume. The construction of an on-site disposal facility will likely result in traffic increases due to the potential need to import clay and other materials for construction onto the site.

RESPONSE:

Truck or rail shipment mode has not yet been selected (still in RA process). Also, "traffic flow" of contaminated materials is hardly the same problem as traffic flow of construction equipment or building materials.

97. Section 6.0, Page 6-6, Para. 2.

USEPA/McCord - No. 31

COMMENTS:

On- and off-site disposal can not be ranked equal in regards to long term effectiveness. On-site disposal is slightly less effective because it requires engineering controls to continue the proper and safe management of contaminated materials remaining on-site. Although disposal off-site results in a permanent solution for the site (because the contaminants are eliminated from the immediate area), there are other balancing criteria which may make off-site disposal less acceptable.

RESPONSE:

Disagree. Effectiveness of long term disposal is ranked the same for on- or off-site because they both achieve the same long term disposal result. But the implementability of on-site versus off-site disposal may have different total ranking scores because of the specific rankings associated with the five implementability subfactors.

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98. Page 6-6, second paragraph.

OEPA/No. 64

COMMENTS:

The assumption that the long-term effects of on-site disposal are equivalent to off-site disposal is faulty. An off-site disposal site such as the Nevada Test Site (NTS) is superior to Fernald in terms of demographics, meteorology, hydrology, and security. On-site disposal requires the wastes to be stored near a large metropolitan center as well as being located above a sole source aquifer. These factors make the use of an off-site disposal facility superior to the on-site disposal of contaminated material.

RESPONSE:

Since NTS cannot be assumed to be the off-site disposal location we cannot use its demographics, meteorology, hydrology, and security, at this time, in the evaluation process. Once an off-site disposal facility is designated these factors will be considered in evaluating on-site vs. off-site disposal.

99. Section 6.0, Page 6-6, Para. 3.

USEPA/McCord - No. 32

COMMENTS:

Containment is not a treatment technology by definition and cannot be considered as such. In addition, the last sentence appears to contradict the earlier discussion in this paragraph which states capping does not provide for sufficient reduction in contaminant mobility. U.S. EPA is establishing a guideline that a reduction of 90 to 99 percent in the concentration or mobility of an individual contaminant of concern should be achieved to qualify as a significant reduction in toxicity or mobility. This guideline does recognize that a reduction of less than 90 percent may achieve health based or other site specific remediation objectives. The analysis of the extent to which mobility or toxicity is reduced is required to be considered and reported in the detailed analysis of alternatives.

RESPONSE:

Agreed. Paragraph is rewritten as appropriate.

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100. Section 6.0, Page 6-6, Para. 3.
USEPA/McCord - No. 33

COMMENTS: Thermal treatment and stabilization technologies were not screened from further consideration in Chapter 3. These technologies or process options should then also be included in the assembled alternatives. The statement that all excavated materials will be subject to treatment seems too narrow in scope and should also include the other treatment or solidification technologies.

RESPONSE: These technologies are being retained for further analysis and are discussed in Chapter 4.

101. Section 6.0, Page 6-6, Para. 4.
USEPA/McCord - No. 34

COMMENTS: Further clarification is needed on what is meant by the statement; "a loss of efficiency has been considered in the ranking."

RESPONSE: Agreed. This sentence is reworded to indicate that the ranking value is affected by Health and Safety Requirements imposed within the Production Area causing a loss in working efficiency.

102. Page 6-7, first full paragraph.
OEPA/No. 65

COMMENTS: It should be assumed that no maintenance will be required for an off-site disposal facility since long-term management, monitoring and maintenance are already committed at sites such as NTS regardless of the presence of FMPC wastes.

RESPONSE: Disagree. At this time, NTS has not been selected as the off-site disposal facility; the actual off-site facility may require maintenance considerations.

103. Page 6-7, third paragraph.
OEPA/No. 66

COMMENTS: Alternatives which require on-site disposal should be ranked lower than off-site disposal alternatives since they are less likely to receive state approval since the site is located near a metropolitan center is located over a sole source aquifer, and would not be a preferred site for disposal.

RESPONSE: See Response #98 (OEPA, #64) and #102 (OEPA, #65).

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104. Page 6-7, third paragraph.
OEPA/No. 67
COMMENTS: **Early preparation, submittal and a priority agency review can overcome potential delays due to permit requirements. Alternatives should not be screened out by this requirement.**
- RESPONSE:** Agreed. However, this factor is just one of the ten screening factors and is not the sole justification for screening out alternatives.
105. Page 6-7, fourth paragraph.
OEPA/No. 68
COMMENTS: **Special or complex engineering should not automatically receive a lower ranking. Complex problems often require complex solutions. These complex alternatives will most likely be more expensive and can be considered in the cost evaluation.**
- RESPONSE:** Disagree. The reason for the ranking system is to provide differentiation among the alternative evaluations. Complex engineering is viewed as more risky, in terms of success, than simple, straight-forward engineering.
106. Section 6.1, Page 6-8, Para. 2.
USEPA/McCord - No. 35
COMMENTS: **The rationale for dividing the levels of contamination into two groups (i.e., 50 to 200 ppm and >200 ppm) should be provided. If there are special handling considerations for materials contaminated with >200 ppm total uranium, then it will be necessary to determine the quantity of materials in various contaminant ranges; specifically, soils in the Plant 6 area with uranium concentrations >15,000 ppm.**
- RESPONSE:** The rationale for separating the contamination zones into two groups is based upon the semi-isolated locations of contamination greater than 200 ppm. Special handling considerations may be required for varying levels of uranium concentrations (e.g. types of respiratory devices) and these considerations will be addressed in the detailed analysis of alternatives, or in the final design of the remedial action.

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107. Section 6.1, Page 6-8, Para. 3.
USEPA/McCord - No. 36

COMMENTS: **The amount of uncontaminated soil present in the interval between 5.5 to 10 feet below grade should also be included in the screening of alternatives. As the alternatives are described, it will be necessary to excavate and handle this material as part of excavating contaminated soils at deeper intervals. Therefore, the excavation and handling of all soils should be included in the alternative evaluation.**

RESPONSE: **Agreed. RI sampling at this depth range has identified very few contaminated areas. However, implementation of alternatives discussions is modified in Chapter 4 to address this situation and available RI data at this depth is added to Chapter 6.0.**

108. Page 6-8, last paragraph.
OEPA/No. 69

COMMENTS: **An explanation should be provided as to why no uranium contamination was found in soils between the 5.5 and 10 foot depth interval when uranium was detected at elevated levels both above and below this interval.**

RESPONSE: **Agreed. Very few samples were taken at these depths. If contamination is found both above and below these depths, it is assumed that the area from 5.5 to 10 feet is also contaminated. RI data will be incorporated as soon as it is available.**

109. Page 6-11, Section 6.1.1.
OEPA/No. 70

COMMENTS: **Repeated references to soil uranium contamination in this section resulting from rainwater runoff from various plants fails to provide a sufficient description of the actual source of contaminants (i.e., air releases, spills, drums, leaking pipes, etc.) within the plants.**

RESPONSE: **Agreed. Where appropriate, information from uranium air emissions is incorporated. Most surficial contamination for the site is suspected to be from rainwater runoff and air emissions. The facilities with these emissions are Plants 1, 4, 5, 8, and 9. In many cases, the source of contamination cannot be determined.**

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110. Page 6-12, Section 6.1.1.5.
OEPA/No. 71
COMMENTS: **The paragraph describes a liquid containing radioactive material leaking into the soil, what contaminants other than uranium are in this leak and has it been controlled?**
- RESPONSE:** The only contamination found based upon current RI data is uranium. This statement is changed to read: "The source of the uranium contamination appears to be leakage from the sump and trench in the chip pickling room and the catch basin for the salt oil (WMCO 1989), . . ."
111. Page 6-12, Section 6.1.1.8.
OEPA/No. 72
COMMENTS: **A discussion should be provided in this section as to whether solvent contamination was found in these oils in the area between the laboratory and pilot plant since the area was a waste solvent drum storage area in the past.**
- RESPONSE:** Agreed. RI data on the area will be incorporated as soon as it is available.
112. Page 6-13, Section 6.1.1.10.
OEPA/No. 73
COMMENTS: **Again, since the Plant 1 storage pad contained drums of mixed waste, a discussion should be given as to whether other contaminants were found in the soils in this area other than uranium.**
- RESPONSE:** Agreed. Mixed waste characterization will be discussed in the FS Report when this information becomes available.
113. Page 6-14, Section 6.1.1.13.
OEPA/No. 74
COMMENTS: **The text states that this was a thorium storage area, yet the only contaminant discussed is uranium. A discussion should be provided on whether thorium contamination is also present and whether it extends to areas not contaminated by uranium, potentially enlarging the area of soil requiring remediation.**
- RESPONSE:** Noted. The entire area surrounding the thorium storage area has been identified as uranium contaminated. Thorium characterization is dependent upon pending RI data.

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114. Page 6-15, Section 6.1.2.1.1.

OEPA/No. 75

COMMENTS:

With soil contaminated by uranium to levels above 200 ppm it is difficult to understand how risk to human health, especially that of on-site workers, is considered to be low. Under the No Action alternative, materials do not necessarily remain in place and undisturbed since nothing is preventing resuspension of dust by wind or other activities in the production area where workers could come into contact with contaminants. An effectiveness ranking of 3 would seem to be more appropriate of this alternative.

RESPONSE:

Disagree. In comparison to the other alternatives, with respect to dust suspension and worker contact, this alternative reduces short-term risk through no action. The effect of the contaminant remaining in place in this situation is accounted for in the long term evaluation.

115. Page 6-15, Section 6.1.2.1.

OEPA/No. 76

COMMENTS:

An explanation of the relatively high score of the No Action alternative (34 out of a possible 50) should be included. This score is high and compares to the other alternatives because of its implementability. However, it should be put into perspective. This will also apply to the other suboperable unit alternative comparisons. A weighing of various alternatives may be more realistic or useful.

RESPONSE:

Agreed. The following statement is added to 6.1.2.1, 6.2.2.1, 6.3.2.1, 6.4.2.1, 6.5.2.1, 6.6.2.1, and 6.7.2.1.

"This alternative is a baseline for comparison to the other alternatives and does not present a realistic overall remediation approach. The relatively high score is primarily a result of the ease of implementation and minimal increase in short-term risk associated with a no action alternative."

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116. Page 6-17, Section 6.1.2.2.1.

OEPA/No. 77

COMMENTS:

The score for the long-term public health and environmental protection (3) seems to be too high. This cap alternative does not address the removal, treatment, containment, or reduction of toxicity and volume of the contaminated soil. What is the justification for a 3 out of 5 score for both the long-term public health and the long-term environmental protection aspects of effectiveness? This also applies to section 6.2.2.2.1 and 6.5.2.2.1.

RESPONSE:

Disagree. Comparatively, a 3 out 5 is justified because a cap drastically reduces vertical migration. Whereas, a slurry wall which scored a "2" does not reduce vertical migration and only reduces horizontal migration if the slurry was is taken down to the water table. In addition, reducing the ranking as suggested will not affect the overall alternative screening.

117. Page 6-17, Section 6.1.2.2.2, last paragraph.

OEPA/No. 78

COMMENTS:

The maintainability factor for a cap should be rated lower than a "4" since a cap will require long-term maintenance and monitoring in order to be effective. Capping probably requires the most maintenance of all alternatives and this should be reflected in the score. This comment applies to all alternatives which use a cap as a part of site remediation.

RESPONSE:

Agreed. Capping does require long-term maintenance and will need to be periodically inspected. Maintainability for a cap is downgraded. SU-A, SU-B, and SU-G are downgraded from a "4" to a "3". SU-E is downgraded from a "3" to a "2". Note that in SU-E, grading and compacting the scrap piles does not leave a homogeneous mass, thus making the maintainability even more difficult.

118. Page 6-18, Section 6.1.2.3.1, second paragraph.

OEPA/No. 79

COMMENTS:

The long-term protection of public health and the environment is not best provided by on-site disposal as echoed in previous comments. Thus, the score for this section should be lower than a "5". This comment applies to all alternatives which use on-site disposal as a method of remediation.

RESPONSE:

Disagree. The best long term protection is not yet decided. At this time, both on- and off-site disposal offer equivalent long-term protection. See response to Comment # 97 (USEPA #31).

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119. Page 6-19, first paragraph.

OEPA/No. 80

COMMENTS:

The maintainability of an on-site disposal facility should be scored lower than a "4" since long-term management, monitoring and maintenance will be required to assure the continued effectiveness of the facility. Significant monitoring requirements will be necessary due to the nature of the wastes and the location of the facility in relation to groundwater resources. This comment applies to all alternatives which use on-site disposal as a method of remediation.

RESPONSE:

Disagree. Maintenance/monitoring requirements for on-site vs. off-site have to be the same since we do not know the location of the off-site disposal facility. Note that the assumptions in Section 6.0 (pages 6-5 to 6-7) state that unless complex technologies are required, maintainability rankings are not lowered.

120. Page 6-19, second paragraph.

OEPA/No. 81

COMMENTS:

As noted above, Agency approval and acceptance of long-term on-site disposal alternatives is less likely than off-site disposal alternatives. Thus, this score should be lowered to a 2 or 3. This comment applies to all alternatives which use on-site disposal as a method of remediation.

RESPONSE:

Agreed. Based on the above OEPA statement we have lowered the ranking score on all on-site alternatives by one point unless other factors come into play.

121. Figure 6-3.

OEPA/No. 82

COMMENTS:

The top half of this figure appears to be the enlarged Fire Training area which is shaded on the lower half of the diagram. If this is true, the figure should more clearly define this relationship. Also, the legend is confusing (isn't the shaded area on the lower figure contaminated?) The same clarifications are needed for Figures 6-4 and 6-6.

RESPONSE:

Relationship of key map to defined area within key map is clarified.

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122. Page 6-20, last paragraph, and Table 6-5.
OEPA/No. 83
COMMENTS: The suspect areas surrounding the scrap metal pile included in Suboperable Unit B are not depicted in Figure 6-2, 6-3, and 6-4.
- RESPONSE:** Agreed. Figure 6-2 is changed. Figure 6-3, 6-4 are not affected by this comment.
123. Table 6-5, page 6-24.
OEPA/No. 84
COMMENTS: Volume calculations for each Suboperable Unit, Suboperable Unit 5 for example, are based on the depth and area of soils contaminated with uranium greater than 50 ppm. Why do the volume calculation not include soils contaminated with PCB, solvents, lead, and arsenic above ARARs?
- RESPONSE:** Once RI data becomes available showing chemical or other contaminants of concern above ARAR levels, this information will be incorporated.
124. Page 6-20, Section 6.1.2.4.2, first paragraph.
OEPA/No. 85
COMMENTS: Maintainability should be scored a "5" for off-site disposal since long-term management, monitoring, and maintenance are already committed at sites such as NTS regardless of the presence of FMPC wastes. This comment applies to all alternatives which use off-site disposal as a method of remediation.
- RESPONSE:** Disagree. NTS cannot be assumed as the off site disposal facility. In addition, the temporary on-site/storage facility will require maintenance.
125. Page 6-20, Section 6.1.2.4.2, second paragraph.
OEPA/No. 86
COMMENTS: The design of an off-site disposal facility is not necessarily a requirement, since a pre-existing facility could be used. Since this design is not required, the score for special engineering requirements should be higher. This comment applies to all alternatives which use off-site disposal as a method of remediation.
- RESPONSE:** Disagree. Since an off-site disposal facility has not been selected, we cannot assume that it would be an existing facility. In addition, a temporary on-site storage facility will be designed and built.

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126. Page 6-27, top partial paragraph.
OEPA/No. 87
COMMENTS: Please explain how the chlorinated solvents that were detected in the soils at the fire training area could result from coal tar. Ohio EPA is unaware of mechanisms of occurrence of these substances in coal tar. A likely and more plausible explanation of their presence is that spent solvents were used for fire training due to their flammability.
- RESPONSE:** Agreed. Paragraph is appropriately rewritten.
127. Page 6-33, Section 6.3.
OEPA/No. 88
COMMENTS: Will the change in status for FMPC from production to remediation affect the size and scope of this suboperable unit since fewer buildings will be required due to the ending of any potential future production?
- RESPONSE:** OU-3 scope impacts from the facility status change have not yet been determined.
128. Page 6-33, last paragraph.
OEPA/No. 89
COMMENTS: Sentence states "The alternatives considered for this suboperable unit consist of nonremoval or interim actions." These actions don't describe alternatives 5, 6, 7, and 8.
- RESPONSE:** Agreed. Sentence is appropriately rewritten: "alternatives... consist of removal and interim actions."
129. Page 6-42, Section 6.3.2.4.1.
OEPA/No. 90
COMMENTS: Given that the Near Term: Temporary Cap increases the short-term environmental risk because the contaminated materials remain in place, why would this not in turn reduce the risk to short-term public health? (i.e. if the Alternative 5 short-term public health score is 3 when the contaminated soil is removed, why doesn't this score improve in Alternative 7 and 8 where the contaminated soils are capped in the near term?) This also applies to Suboperable Unit D analysis.
- RESPONSE:** Disagree. For Alternative 7 and 8, the short term evaluation encompasses both near and far term actions, therefore the short-term environmental protection is downgraded due to the contaminants remaining in place.

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130. Page 6-43, Section 6.3.2.4.2 and Page 6-43, Section 6.3.2.5.2.
OEPA/No. 91
COMMENTS: **What is the rationale for increasing the score of the constructability factor from 2 in Alternatives 5 and 6 to 3 in Alternatives 7 and 8? The same difficulties in constructability are present, if not more, due to the construction of a temporary cap in the near term. This also applies to Suboperable Unit D analysis.**
- RESPONSE:** With Alternatives 5 and 6 the buildings remain in place making it difficult to excavate under the facility. With Alternatives 7 and 8 the contaminated soil is removed after the facility/building has been removed.
131. Page 6-47, first paragraph, first line.
OEPA/No. 92
COMMENTS: **A period is missing at the end of the first sentence.**
- RESPONSE:** Agreed. Period is inserted between "removed" and "Table."
132. Page 6-49, Section 6.4.1.4.
OEPA/No. 93
COMMENTS: **Since the incinerators in Building 39A were used for the destruction of both solid and liquid wastes, were contaminants other than uranium found in soils in this area?**
- RESPONSE:** No contaminants other than radiological had been found in this area at the time the ISA was printed (September 1990). Additional RI characterization results are expected before the FS report is due.
133. Page 6-53, Section 6.4.2.3.2, last paragraph.
OEPA/No. 94
COMMENTS: **Clarification is requested in the first sentence stated that "Transportation of contaminated wastes off site will be in compliance with NRC40CFR and 49CFR.**
- RESPONSE:** Sentence is rewritten: "...in compliance with all requirements under 40CFR and 49CFR."

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134. Page 6-55, first partial paragraph.

OEPA/No. 95

COMMENTS: The maintainability factor for this alternative should also consider the maintenance required for the temporary cap thus reducing this score below that of simple removal and on-site disposal.

RESPONSE: Agreed. The ranking score for maintainability (Alternatives 7 and 8) is changed from a "4" to a "3" for SU-C. Note that this comment actually applies to SU-D, but the same rationale applies to SU-C. As part of this comment review activity, the applicability of Alternatives 7 and 8 has been re-evaluated and determined to be inapplicable to SU-D (i.e., the near-term/far-term response action is not applicable to facilities already designated for demolition).

135. Page 6-56, Section 6.4.2.5.2, second paragraph.

OEPA/No. 96

COMMENTS: The maintainability factor for this alternative should consider the maintenance required for the temporary cap thus reducing this score below that of simple removal and off-site disposal.

RESPONSE: Agreed. See response to Comment #134 (OEPA No. 95) above.

136. Page 6-56, Section 6.4.2.5.2, third paragraph.

OEPA/No. 97

COMMENTS: Clarification is requested in the first sentence stating that "Transportation of contaminated wastes off site will be in compliance with NRC40CFR and 49CFR".

RESPONSE: Sentence is rewritten: "...in compliance with all requirements under 40CFR and 49CFR."

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137. Page 6-57, Section 6.4.2.6.1.
OEPA/No. 98
COMMENTS: It is unclear why DOE considers short-term protection of human health to be lower on Alternative 13 than on Alternative 6. There appears to be substantially more risk associated with mining under a building than with removing the building and then the soil. The scores on short-term effectiveness are not reflective of this risk.
- RESPONSE:** We assume that the comparison made in the comment is between alternative 13 and 5. Alternative 13 is ranked lower because of the surveying, decontamination and dismantling of the buildings piece by piece. Since the facilities may be contaminated, there could be additional hazards associated with these activities.
138. Page 6-57, Section 6.4.2.6.1.
OEPA/No. 100
COMMENTS: Last sentence contains a typographical error. The reduction in toxicity, mobility, or volume factor should be a 5 according to Table 6-10.
- RESPONSE:** Agreed. Table 6-10 and last sentence in 6.4.2.a.1 is now in agreement.
139. Page 6-57, Section 6.4.2.6.1.
OEPA/No. 101
COMMENTS: This section states that there will be little or no risk to the public immediately off-site due to dust from the removal action. The next sentence states: "for on-site activities, airborne releases would have the most direct potential impact on the community in the short-term", hence, a score of 2. Are these two statements conflicting or is the community being considered the on-site community? This comment also applies to Section 6.4.2.7.1 on pages 6-58.
- RESPONSE:** Agreed, there is a conflict in the statement. These sections are appropriately rewritten.
140. Page 6-57, Section 6.4.2.6.2.
OEPA/No. 99
COMMENTS: Explain why this alternative will "require special techniques similar to mining operations."
- RESPONSE:** The statement is not appropriate for this alternative (#13) and is deleted. The statement is also deleted from Section 6.4.2.7.2.

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141. Section 6.4.2.6.2, Page 6-57, Para. 5.
USEPA/McCord - No. 37

COMMENTS: **The constructability of this alternative should be no more difficult than either alternatives 7 or 8 which both include removing facilities.**

RESPONSE: Disagree. Under Alternatives 7 and 8, facilities are not being removed as part of the FS remediation process. However, upon review of this suboperable unit alternatives 7 and 8 have been eliminated as applicable to SU-D because the facilities in this suboperable unit have been designated for possible removal under the FS and these alternatives assume an eventual building removal but not as part of the FS. These changes are reflected in the appropriate tables and sections.

142. Page 6-59, Section 6.4.2.7.2.
OEPA/No. 102

COMMENTS: **Clarification is requested in the first sentence stating that "Transportation of contaminated wastes off site will be in compliance with NRC40CFR and 49 CFR."**

RESPONSE: Sentence is rewritten: "...in compliance with all requirements under 40CFR and 49CFR."

143. Page 6-63, Section 6.5.1.3.
OEPA/No. 103

COMMENTS: **Since little data exists as to the type and level of contamination present for the construction rubble mound, this area should be sampled and characterized and radionuclides, organics (volatiles and semi-volatiles), and inorganics.**

RESPONSE: A work plan is being prepared addressing additional sampling and analysis to determine the nature and extent of contamination in this rubble mound. The results of this characterization will be presented in the FS Report.

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144. Page 6-65, Section 6.5.2.1.1.
OEPA/No. 104
COMMENTS: If "short-term risks to the on-site workers are great due to aboveground contamination," then the short-term human health protection factor should be scored a "4" or lower. A score of "5" seems inappropriate. On-site workers are a component which must be considered when scoring alternatives as they are part of "the public."
- RESPONSE:** Agreed. This section (and other similar sections) is rewritten.
145. Page 6-65, Section 6.5.2.2.1.
OEPA/No. 105
COMMENTS: This section states that the short-term public health is ranked lower than the short-term environmental protection, however, both factors are scored a 3.
- RESPONSE:** Agreed. Text was incorrect, is modified to reflect both factors scoring a 3.
146. Page 6-66, first sentence.
OEPA/No. 106
COMMENTS: This sentence states that short-term public health is ranked lower than short-term environmental protection when in actuality it is not (Table 6-12 gives them both a score of 3). This discrepancy should be corrected.
- RESPONSE:** Agreed. See response to Comment #145 (OEPA No. 105).
147. Page 6-66, Section 6.5.2.2.2, third paragraph.
OEPA/No. 107
COMMENTS: In the last sentence, please clarify the score given to special engineering requirements for this alternative.
- RESPONSE:** This was a typo. The line now reads "factor scored a 4."

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148. Page 6-66, Section 6.5.2.2.2.
OEPA/No. 108

COMMENTS: Why are the maintainability and reliability factors scored lower (3) for this Suboperable Unit cap alternative than for the Suboperable Unit A cap maintainability and reliability (4)?

RESPONSE: Maintainability and reliability for a cap placed over a graded and compacted scrap metal is assumed to be worse than the same factors for placing a cap over compacted soils. The assumption is based on the non-homogeneous nature of the graded and compacted scrap piles.

149. Page 6-67, Section 6.5.2.3.1.
OEPA/No. 110

COMMENTS: The long-term effectiveness of Alternative 3 should be scored much lower than "4" since not only is waste being stored in an on-site disposal facility but contamination is being left in place and capped, resulting in two areas to maintain and monitor.

RESPONSE: Disagree. In comparison to alternatives 2 and the 5/6 pair for aboveground contaminants, this alternative ranks in the middle between a cap over the aboveground contaminants and removal with on/off-site disposal. The result of maintaining two areas is accounted for in the maintainability factor which is decreased to a "3".

150. Page 6-67, Section 6.5.2.3.2.
OEPA/No. 111

COMMENTS: The maintainability for Alternative 3 should be scored low since it requires the continued long-term management, monitoring and maintenance of two on-site areas containing contaminated wastes. This should perhaps receive the lowest maintainability score of all the alternatives.

RESPONSE: Capping does require long-term maintenance and will need to be periodically inspected. The maintainability has been re-evaluated and scores a 3 for Alternatives 3 and 4.

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151. Page 6-69, third paragraph.
OEPA/No. 112
COMMENTS: Clarification is requested in the first sentence stating that "Transportation of contaminated wastes off site will be in compliance with NRC40CFR and 49CFR.
- RESPONSE:** Sentence is rewritten: "...in compliance with all requirements with 40CFR and 49CFR."
152. Page 6-71, Section 6.5.2.6.2.
OEPA/No. 113
COMMENTS: The construction of an off-site disposal facility is not necessarily a requirement since a pre-existing facility may be used. The scoring of constructability should be changed to reflect this.
- RESPONSE:** Disagree. The off-site disposal facility has not been selected at this time, therefore no assumption can be made concerning a pre-existing facility.
153. Section 6.6, Page 6-71, Para. 7.
USEPA/McCord - No. 38
COMMENTS: The extent of uranium contaminated ground water above 30 $\mu\text{g/l}$ should be discussed. This may significantly effect the location and magnitude of the ground-water collection system considered.
- RESPONSE:** Area descriptions under 6.6.1 discuss where within each quadrant uranium concentrations are high. Location and magnitude of the collection system will only be affected by high sludge content in the groundwater. Our RI data, to date, shows that sludge content is less than 1%. This factor could, however, affect the water treatment plant, and will be considered in the detailed analysis of alternatives.
154. Figure 6-9.
OEPA/No. 114
COMMENTS: The legend in this figure should give the unit of measurement for the total uranium concentration contours (i.e., $\mu\text{g/l}$).
- RESPONSE:** Agreed. The unit of measurement is added.

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155. Figure 6-9.
OEPA/No. 109
COMMENTS:

The effectiveness of the proposed extraction wells depends on the two things. First, the reliability of uranium contours based on limited groundwater contaminant concentration data. Second, the assumption that the perched groundwater zone(s) are hydraulically connected. This should be mentioned.

RESPONSE:

Agreed. The above information is added to Section 6.6.

156. Table 6-13, page 6-76.
OEPA/No. 115
COMMENTS:

The Alternative screening process for Operable Unit 3 does not provide for adequate flexibility in the total ranking when comparing the alternatives. For example, in Suboperable Unit F, similar Alternatives 9 and 12 result in misleading relative total scores. The only major difference between the alternatives is the provision for the subsurface barrier in Alternative 12. Because of this additional technology option, the short-term public health and environmental protection factor scores are reduced. However, the advantage to the long-term factors and reduction in mobility that one might expect by implementing the subsurface barrier technology process option is not reflected in these factors scores in comparison to Alternative 9 as they are all at the maximum score of 5. Therefore, the total score is reduced for Alternative 5 based on the reduced short-term factor scores and a reduced special engineering factor. Therefore, the screening process allows for "negative" flexibility, but little variation in "positive" flexibility. See also comment #77.

RESPONSE:

The justification and ranking in the ISA for Operable Unit 3 is based upon the Feasibility Study Work Plan. The ISA ranks the major criteria to assess and eliminate any non-applicable alternatives. The Detailed Analysis of Alternatives will go one step further by analyzing subcriteria within each major criteria. In the selection of the Preferred Alternative, each subcriteria will be used in a weighted ranking. Therefore, the ranking in the OU3 ISA is appropriate and correct.

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157. Section 6.6.2.2.2, Page 6-77, Para. 6.
USEPA/McCord - No. 39

COMMENTS: The text describes a well point system as the ground-water extraction process option; however, the screening of ground-water extraction process options did not select a representative ground-water extraction process option. The text should consistently report the results of the process option screening.

RESPONSE: Agreed. "Extraction well system" is changed to "extraction system."

158. Page 6-78, last sentence.
OEPA/No. 116

COMMENTS: Agency approval for Alternative 10 should not be scored the same as for Alternative 9 since Alternative 10 involves the addition of a component (monitoring) which may fail and result in the release of untreated water to the environment at concentrations above acceptable levels.

RESPONSE: The addition of the monitoring component, however, should not require a special approval. As far as whether the monitoring component fails or not is addressed under reliability where Alternative 9 scores higher than Alternative 10.

159. Section 6.6.2.5.3, Page 6-81, Para. 2.
USEPA/McCord - No. 40

COMMENTS: The reported estimated cost of over \$250 million appears excessive. A relative cost of medium seems more appropriate for this alternative.

RESPONSE: Agreed.

160. Page 6-81, Section 6.7.
OEPA/No. 117

COMMENTS: See comment #15.

RESPONSE: See Response #35. (OEPA #15.) Effluent line characterization is dependent upon pending RI data and will be incorporated when available.

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161. Page 6-83, second paragraph.
OEPA/No. 119
COMMENTS: Please correct the typographic error "The-232" with "Th-232."
RESPONSE: Agreed.
162. Page 6-88, Section 6.7.2.4.2, second paragraph.
OEPA/No. 120
COMMENTS: Clarification is requested in the first sentence stating that "Transportation of contaminated wastes off site will be in compliance with NRC40CFR and 49CFR."
RESPONSE: Sentence is rewritten: "...in compliance with all requirements under 40CFR and 49CFR."
163. Page 7-1, Section 7.1, second paragraph.
OEPA/No. 121
COMMENTS: See previous comments regarding the acceptability by Ohio EPA of the DOE selected cleanup and source control criteria for total uranium in soils and groundwater.
RESPONSE: Noted. This paragraph is rewritten to be consistent with specific responses to cleanup and source control criteria comments addressed in other chapters of the ISA.
164. Section 7.1, Page 7-1, Para. 3.
USEPA/McCord - No. 41
COMMENTS: Portrayal of the 35 pci/g uranium residual in soil as a criteria for cleanup and source control is clearly premature and incorrect. It should not be portrayed as such.
RESPONSE: Noted. This paragraph contains values consistent with those used in other sections of the report.

See response to Comment Number 53 (USEPA No. 24) for the rationale for using this value.

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165. Section 7.1, Page 7-3, Para. 1.
USEPA/McCord - No. 42
COMMENTS: Table 7-2 shows alternatives and associated technology types not process options.
RESPONSE: Agreed. Sentence wording is changed.
166. Page 7-6, first paragraph.
OEPA/No. 122
COMMENTS: A few of the organic contaminants listed in this paragraph are different that those listed on Page 6-27. This discrepancy should be corrected.
RESPONSE: Agreed. Contaminant lists are made consistent.
167. Section 7.2.2, Page 7-7, Para. 1.
USEPA/McCord - No. 43
COMMENTS: A description of the extent of uranium contamination exceeding the remedial action objective of 30 $\mu\text{g/l}$ would also be appropriate in this section.
RESPONSE: Agreed. Since the last revision of this report, more data has been made available which includes contamination contours of groundwater.
168. Page 7-9, second paragraph.
OEPA/No. 123
COMMENTS: Traffic flow thorough the community will not necessarily be greater with the off-site transportation of contaminated materials. Further, the use of rail shipments would yield less traffic flow particularly if shipments are timed to correspond with periods of low local traffic volume. The construction of an on-site disposal facility will likely result in traffic increases due to the potential need to import clay and other materials for construction onto the site.
RESPONSE: See Response #96, (OEPA, #63).

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169. Page 7-9, third paragraph.

OEPA/No. 124

COMMENTS:

As previously noted, the assumption that the long-term effects of on-site disposal are equivalent to off-site disposal is questionable. An off-site disposal site such as the Nevada Test Site (NTS) is superior to Fernald in terms of demographics, meteorology, hydrology, and security, On-site disposal requires the wastes to be stored near a large metropolitan center as well as being located above a sole source aquifer. These factors make the use of an off-site disposal facility superior to the on-site disposal of contaminated material.

RESPONSE:

See Response #98, (OEPA, #64).

170. Page 7-10, second paragraph.

OEPA/No. 125

COMMENTS:

The reliability of an alternative should also be judged upon the relative consequences which would result upon the failure of a particular operational system within the alternative.

RESPONSE:

The possibility and consequences of the failure of a particular operational system is incorporated into the reliability of its performance requirements over time.

171. Page 7-10, third paragraph.

OEPA/No. 126

COMMENTS:

The maintainability of an alternative should account for the number of areas to be maintained (i.e. capped area and on-site disposal facility). It is also important to note that maintenance of off-site disposal facilities need not be included if the waste is going to be sent to a pre-existing facility or one designed to accept waste from several sites. See previous comments.

RESPONSE:

The quantity and types of areas to be maintained is included in the ranking of this factor. Also, the off-site disposal facility has not been selected, therefore, the assumption that no maintenance will be required cannot be made.

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172. Section 7.5, Page 7-11, Para. 4.
USEPA/McCord - No. 44

COMMENTS: The results of the treatability studies will have a significant impact on the detailed analysis of alternatives. The results of the treatability studies should be considered and presented in the detailed analysis of alternatives report.

RESPONSE: Agreed. However, treatability study activities for Operable Unit 3 are being combined with treatability study activities for the other operable units to take advantage of consolidated testing and data analysis programs. The data results will be incorporated in the appropriate reports when available.

173. Page 7-11, last sentence.
OEPA/No. 127

COMMENTS: Ohio EPA questions how a competent or acceptable detailed analysis of alternatives can be performed if results from the treatability studies will not be available to help determine the most effective technologies.

RESPONSE: Agreed. See Response #172, (USEPA, #44).

174. Appendix A, Page A-1, first paragraph.
OEPA/No. 128

COMMENTS: Why this document uses ARARs information that was presented to DOE on June 13, 1989 is beyond Ohio EPA's comprehension. There is absolutely no reason for using such dated information when over the last several months, in comment letters to DOE on various other operable unit documents, Ohio EPA made several comments pertaining to ARARs and TBCs which have equal applicability to Operable Unit 3. It makes one wonder whether DOE's Operable Unit Mangers are sharing this information in order to prepare better documents. It is sincerely hoped that this trend by DOE and its contractors to use outdated information is reversed.

RESPONSE: The ARARs presented in the Operable Unit 3 Initial Screening of Alternatives Report represent federal, state, and local regulations and statutes compiled throughout the RI/FS process. This is an iterative process and new ARARs are added and/or deleted as more specific information is made available. A detailed ARAR table for Operable Unit 3 was presented to U.S. EPA on August 24, 1990. Ohio EPA was informed of the meeting beforehand but could not attend. The table is revised to incorporate comments made by U.S. EPA and is

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included.

175. Appendix A, page A-5, second bullet.
OEPA/No. 129

COMMENTS: DOE's statement that "specific criteria for chemical concentrations have so far only been established for Lake Erie and the Ohio River" is not accurate. OEPA has surface water quality criteria for both acute and chronic effects on aquatic organisms as part of OAC 3745-1-07. This should be listed in Table A-1. Also, in this section on Ohio ARARs, the state's air pollution law should be cited (ORC 3704).

RESPONSE: Agreed. A revised table of potential ARARs for Operable Unit 3 has been drafted based on the August 24, 1990 meeting with U.S. EPA. OAC 3745-1-07 and ORC 3704 are included in Appendix A of this ISA.

176. Appendix A, page A-5, fourth bullet.
OEPA/No. 130

COMMENTS: Not all portions of OAC 3745-9 apply exclusively to new wells intended for human consumption. For example, OAC 3745-9-10 covers the abandonment of test holes and wells and constitutes an actions specific state ARAR for remedial actions involving the installation of any borings or wells (whether for water supply or monitoring purposes) at the FMPC. This should be noted in the text here.

RESPONSE: Agreed. OAC 3745-9-10 is included in Appendix A of this ISA.

177. Appendix A, Page A-6.
OEPA/No. 131

COMMENTS: Proposed MCLs and MCLGs must be listed as federal TBC criteria.

RESPONSE: Agreed. Proposed MCLs and MCLGs are distinguished as, "To be considered" as appropriate in the revised Appendix A of this ISA.

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178. Appendix A, Table A-1.

OEPA/No. 132

COMMENTS:

An action-specific state of Ohio ARAR which should be listed in this table is ORC 3767 (nuisance prevention). Another action-specific state ARAR which must be included in Table A-1 is ORC 6111 (prohibits pollution of "waters of the state"). The citation for Ohio hazardous waste treatment, storage, or disposal facility location standards is incorrect. The correct citation is: OAC 3745-54-18.

RESPONSE:

A revised table of potential ARARs has been drafted and is incorporated into the report appendix. This revision includes OAC 3745-15-07, Nuisance Prevention. The inclusion of ORC 3767 in the next revision of the ARAR table will be considered. ORC 6111.45 has previously been added by DOE to the revised table of ARARs. Also, the citation for Ohio hazardous waste treatment, storage, or disposal facility, location standards, has been changed to OAC 3745-54-18 in the revised Appendix A of this ISA.

179. Appendix A, Table A-1.

OEPA/No. 133

COMMENTS:

Please explain why the description for OAC 3745-81 only mentions limits set on radiological parameters and not on other organics and inorganics that have been found in the Operable Unit 3 study area. This deficiency should be corrected. In addition, this table should be organized such that ARARs and TBCs are clearly distinguished from each other.

RESPONSE:

Agreed. A reference to OAC 3745-81 for organic and inorganic parameters identified in Operable Unit 3 is included in the revised Appendix A. Also the table of potential ARARs in the revised report now distinguishes ARARs from TBCs.