

1784

**OHIO EPA COMMENTS INITIAL SCREENING OF
ALTERNATIVES O.U. 3**

XX-XX-XX

**15
ENCLOSURE**

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INITIAL SCREENING OF ALTERNATIVES O.U.3

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General Comments:

1. 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 O.U.3?
2. 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 can not 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.

Specific Comments:

1. Page ES-1, first paragraph, Page 1-1, first paragraph: 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?
2. Page ES-5, General Comment: 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.
3. Page ES-6, first paragraph, first and second sentences: 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,

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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.

4. Page ES-7, third paragraph: 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.
5. Page 1-11, Section 1.4.4, last paragraph: 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.
6. Page 1-13, Section 1.4.2, first bullet: "Main Substation & Garage: Main substation is not identified on Figure 1-4.
7. Page 1.15, first bullet: The Decontamination and Decommissioning facility is not indicated on Figure 1.4.
8. Page 1-19, Table 1-2: The list for Plant 2/3 should include all compound types listed in the text at the top of page 1-17.
9. Page 1-19, third line: Typo "Cadmium(s)".
10. Page 1-20, third paragraph: 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?
11. Page 1-22, Table 1-3: 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 compound 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.

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12. Page 1-23, Table 1-4: 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.
13. Page 1-24, second paragraph: 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 ug/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.
14. Page 1-24, second paragraph: 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.
15. Page 1-24, fourth paragraph: The results of the July 1990 FMPC Outfall Pipeline Investigation, Gravel Pack Study and Integrity Testing Final Report should be included in this section.
16. Page 1-27, first paragraph: The last sentence of this paragraph should be separated into two sentences in order to make better sense.
17. Page 1-27, second paragraph, fifth bullet: 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.
18. Page 1-28, last paragraph: 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.

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19. Page 1-30, Tables 1-6: 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.
20. Page 1-30, Table 1-6: Text of Page 1-28 indicates full radiological testing has not been completed for all samples taken in OU-3. This should be clearly presented on Table 1-6. It is unclear if "no radioactive elements identified" may be synonymous with "not analyzed".
21. Page 1-31, 1.4.6.2, second bullet: Typo "less that" should be "less than".
22. Page 2-1, last paragraph: 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.
23. Page 2-4, third paragraph: 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.
24. Page 2-5, third paragraph: 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.
25. Page 2-6, Table 2-1: Other TBCs such as MCLGs and proposed MCLs should be listed in this table.
26. Page 2-7, Table 2-2: 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).
27. Page 2-8, top partial paragraph: 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. 4

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28. Page 2-8, section 2.1.4.1, second paragraph: 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?
29. Page 2-8, fourth paragraph: 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 is not yet completed in the southwest and southeast quadrants, (page 1-28, third paragraph and page 1-31, third paragraph).
30. Page 2-9, first paragraph: 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?
31. Page 2-9, second paragraph: As mentioned by Ohio EPA in several comment letters on previous DOE submittals regarding EE/CA documents, a level of 30 ug/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.
32. Tables 2-3 and 2-4: 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.
33. Page 2-13, second paragraph: 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.

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34. Page 3-20, Section 3.5.11: The word "toluene" is misspelled in the second paragraph.
35. Figure 3-3: The 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)).
36. Page 3-4, third paragraph: 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.
37. Page 3-10, fourth paragraph: The first sentence may be more appropriate if it reads: grading is useful in helping control ponding, etc.
38. Page 3-11, 3.4, second paragraph: Typo "Jet-Educator" should be "Jet Eductor".
39. Page 3-12, paragraph 2: It seems unlikely that highly permeable materials drain "relatively slow."
40. Page 3-12, third paragraph: "the saturated thickness...is typically less than 5 feet" should be more clearly identified as pertaining to the perched water zone.
41. Page 3-15, Section 3.5: 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).
42. Page 3-17, second paragraph: The last sentence reads: "Decontamination of a centrifuge...is a viable treatment process". The sentence should be re-worded to say that centrifugation is a viable treatment process.
43. Page 3-20, second paragraph: Methods of treating the volatile organics in the air after air stripping, such as granular activated carbon, should be included.
44. Page 3-22, first paragraph: "Chemical extraction uses chemicals to remove organic and volatile inorganic compounds from soils." Shouldn't this read: "inorganic and organic compounds"? 6

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45. Figure 3-3, Electro-osmosis Process Option: 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.
46. Figure 3.3, Stripping Process Option: Only the air stripping process is described in this figure. Steam stripping should be included in this discription or listed.
47. Figure 3.3, On-Site Waste Disposal Remedial Technology Type: 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.
48. Figure 3.3, Stabilization Remedial Technology Type, Excavation, Treatment, Disposal Response Action: 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?
49. Page 4-4, first paragraph: 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).
50. Page 4-7, Table 4-2, Remedial Action Objectives, first bullet: The concentration of total uranium should be in "ug/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.
51. Page 4-9, Table 4-2: 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?

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52. Page 4-11, seventh paragraph: It should be stated that the on-site disposal facility will be designed in accordance with 10CFR61 and 40CFR264.
53. Page 4-12, fifth paragraph: This paragraph references the method of removing 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?
54. Chapter 6, general comment: 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.
55. Chapter 6, general comment 1: 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.
56. Chapter 6, general comment: 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.
57. Page 6-2, Table 6-1: Typographical error: "hydrachloric": under Suboperable Unit A, should read hydrochloric.

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58. Page 6-2, Table 6-1: Rubble mound 2 should also be included. (See comment #14).
59. Page 6-2, Table 6-1: 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.
60. Page 6-2 Table 6-1: 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.
61. Page 6-2, Table 6-1: 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.
62. Figure 6-1: The contaminated areas around Plants 5 and 8 are inconsistent with respect to Table 1-5 on page 1-29.
63. Page 6-6, first paragraph: 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.
64. Page 6-6, second paragraph: 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.

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65. Page 6-7, first full paragraph: 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.
66. Page 6-7, third paragraph: 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.
67. Page 6-7, third paragraph: 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.
68. Page 6-7, fourth paragraph: 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.
69. Page 6-8, last paragraph: 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.
70. Page 6-11, Section 6.1.1: 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.
71. Page 6-12, Section 6.1.1.5: 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?
72. Page 6-12, Section 6.1.1.8: A discussion should be provided in this section as to whether solvent contamination was found in the soils in the area between the laboratory and pilot plant since the area was a waste solvent drum storage area in the past.
73. Page 6-13, Section 6.1.1.10: Again, since the Plant 1 storage pad contained drums of mixed wastes, a discussion should be given as to whether other contaminants were found in the soils in this area other than uranium.

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74. Page 6-14, Section 6.1.1.13: 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.
75. Page 6-15, Section 6.1.2.1.1: 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.
76. Page 6-15, Section 6.1.2.1: 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 weighting of various alternatives may be more realistic or useful.
77. Page 6-17, Section 6.1.2.2.1: 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.
78. Page 6-17, Section 6.1.2.2.2, last paragraph: 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.
79. Page 6-18, Section 6.1.2.3.1, second paragraph: 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.

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80. Page 6-19, first paragraph: 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.
81. Page 6-19, second paragraph: 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.
82. Figure 6-3: 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.
83. Page 6-20, last paragraph, and Table 6-5: The suspect areas surrounding the scrap metal pile included in Suboperable Unit B are not depicted in Figures 6-2, 6-3, and 6-4.
84. Table 6-5, page 6-24: 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?
85. Page 6-20, Section 6.1.2.4.2, first paragraph: 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.
86. Page 6-20, Section 6.1.2.4.2, second paragraph: 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. 12

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87. Page 6-27, top partial paragraph: 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.
88. Page 6-33, Section 6.3: 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?
89. Page 6-33, last paragraph: Sentence states "The alternatives considered for this suboperable unit consist of nonremoval of interim actions." These actions don't describe alternatives 5, 6, 7, and 8.
90. Page 6-42, Section 6.3.2.4.1: 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 Alternatives 7 and 8 where the contaminated soils are capped in the near term?) This also applies to Suboperable Unit D analysis.
91. Page 6-43, Section 6.3.2.4.2 and Page 6-43, Section 6.3.2.5.2: 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.
92. Page 6-47, first paragraph, first line: A period is missing at the end of the first sentence.
93. Page 6-49, Section 6.4.1.4: 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?
94. Page 6-53, Section 6.4.2.3.2, last paragraph: Clarification is requested in the first sentence stated that "Transportation of contaminated wastes off site will be in compliance with NRC40CFR and 49CFR."

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95. Page 6-55, first partial paragraph: 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.
96. Page 6-56, Section 6.4.2.5.2, second paragraph: 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.
97. Page 6-56, Section 6.4.2.5.2, third paragraph: Clarification is requested in the first sentence stating that "Transportation of contaminated wastes off site will be in compliance with NRC40CFR and 49CFR".
98. Page 6-57, Section 6.4.2.6.1: 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.
99. Page 6-57, Section 6.4.2.6.2: Explain why this alternative will "require special techniques similar to mining operations".
100. Page 6-57, Section 6.4.2.6.1: Last sentence contains a typographical error. The reduction in toxicity, mobility, or volume factor should be a 5 according to Table 6-10.
101. Page 6-57, Section 6.4.2.6.1: 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.
102. Page 6-59, Section 6.4.2.7.2: Clarification is requested in the first sentence stating that "Transportation of contaminated wastes off site will be in compliance with NRC40CFR AND 49 CFR."

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103. Page 6-63, Section 6.5.1.3: 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.
104. Page 6-65, Section 6.5.2.1.1: 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."
105. Page 6-65, Section 6.5.2.2.1: 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.
106. Page 6-66, first sentence: 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.
107. Page 6-66, Section 6.5.2.2.2, third paragraph: In the last sentence, please clarify the score given to special engineering requirements for this alternative.
108. Page 6-66, Section 6.5.2.2.2: 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)?
109. Figure 6-9: 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.
110. Page 6-67, Section 6.5.2.3.1: 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.
111. Page 6-67, Section 6.5.2.3.2: The maintainability for Alternative 3 should be scored low since it requires the continued long-term management, monitoring and maintenance

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- of two on-site areas containing contaminated wastes. This should perhaps receive the lowest maintainability score of all the alternatives.
112. Page 6-69, third paragraph: Clarification is requested in the first sentence stating that "Transportation of contaminated wastes off site will be in compliance with NRC40CFR and 49CFR.
113. Page 6-71, Section 6.5.2.6.2: 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.
114. Figure 6-9: The legend in this figure should give the unit of measurement for the total uranium concentration contours (i.e., ug/l).
115. Table 6-13, page 6-76: 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 Alternative 9 and 12 result in misleading relative total scores. The only major difference between the alternatives is the provision for a 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.
116. Page 6-78, last sentence: 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.
117. Page 6-81, Section 6.7: See comment #15. 16
118. 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

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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.

119. Page 6-83, second paragraph: Please correct the typographic error "The-232" with "Th-232."
120. Page 6-88, Section 6.7.2.4.2, second paragraph: Clarification is requested in the first sentence stating that "Transportation of contaminated wastes off site will be in compliance with NRC40CFR and 49CFR.
121. Page 7-1, Section 7.1, second paragraph: 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.
122. Page 7-6, first paragraph: A few of the organic contaminants listed in this paragraph are different than those listed on Page 6-27. This discrepancy should be corrected.
123. Page 7-9, second paragraph: 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.
124. Page 7-9, third paragraph: 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.

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125. Page 7-10, second paragraph: 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.
126. Page 7-10, third paragraph: 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.
127. Page 7-11, last sentence: 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.
128. Appendix A, Page A-1, first paragraph: 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 Managers 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.
129. Appendix A, page A-5, second bullet: 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).
130. Appendix A, page A-5, fourth bullet: 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.

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131. Appendix A, page A-6: Proposed MCLs and MCLGs must be listed as federal TBC criteria.
132. Appendix A. Table A-1: 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.
133. Appendix A, Table A-1: 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.