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**RESPONSE TO COMMENTS OPERABLE UNIT 5 -
"INITIAL SCREENING OF ALTERNATIVES"
VERSION 4 REPORT ID - FMPC - 0512-4**

10/15/90

**ASI/DOE-ORO
56
REPORT
OU5**

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1. GENERAL COMMENT

USEPA

COMMENT: Generally the Initial Screening of Alternatives (ISA) report addresses all areas required by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The assembled alternatives are generally supported by the screening of remedial technologies and process options. However, additional information is required to support the conclusions and screening results. This information is described in several of the specific comments attached.

RESPONSE: This comment is too general to provide an adequate response. Any concerns pertaining to this comment will be addressed as they are identified within specific comments.

2. GENERAL COMMENT

USEPA

COMMENT: The scope of the ISA report is too limited. Perched groundwater and subsurface soils should be addressed in this operable unit. With the exception of a 5-foot buffer zone around the waste pits the ISA report for OU1 did not consider subsurface soils. It also was not clear from the ISA report for OU4 if subsurface soil would be addressed as part of the feasibility study (FS) for that specific OU. DOE indicated during the OU4 ARARs meeting that subsurface soil would be addressed as part of OU5. Either subsurface soils should be addressed in this ISA report or the other ISA reports should be expanded.

RESPONSE: While Operable Unit 5 specifically addresses environmental media, perched groundwater and subsurface soils are being addressed within the context of the source operable units. This inclusion of environmental media in the remedial actions for the source operable units is in conformity with EPA guidance and is appropriate for both waste removal and source control remedial alternatives. Largely, both perched groundwater and below surface contamination in the soils is addressed within Operable Unit 3 as defined in the Feasibility Study Work Plan. Additionally, perched groundwater and underlying soils are included within the source control actions for Operable Unit 1, and Operable Unit 4 includes underlying soils as appropriate. The analytical data for subsurface soil, which will document the extent of soil contamination, will be included in the Remedial Investigation reports as applicable to each operable unit.

3. GENERAL COMMENT

USEPA

COMMENT: Tables in Appendix A need to present complete analytical results for specific sampling locations (groundwater, soil, subsoil, sediment...). The summary tables presented in Appendix A are helpful and should remain in the report. However, the summary tables do not provide sufficient information to allow for an independent check of the accuracy of the conclusions asserted in the text of the report.

RESPONSE: The data summary tables are accurate summaries of the complete analytical results available. Complete analytical results from the data base have been transmitted to the U.S. EPA and these data will be presented in the RI report.

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4. GENERAL COMMENT

USEPA

COMMENT: The ISA report needs to present a better description on the volumes and areas of media to be remediated and the interrelationship between operable units. Although some of this information is presented in Section 6.0 of the report, it is more appropriate to present this information earlier in the screening process in more detail.

RESPONSE: The areas and extent of contamination have been summarized within Chapter 3.0 of the report. Additionally, as noted, volumes and areas to be remediated are presented in Section 6.0 of the report. These numbers are being further refined within the detailed analysis of alternatives. Since the FMPC RI has followed an accelerated schedule for preparation of the feasibility study, information is being used as obtained from ongoing RI and risk assessment efforts. The amount of refinement of these areas earlier in the process has not affected the completeness of the initial screening.

5. PG. ES-2, FIRST PARAGRAPH

OHIO EPA

COMMENT: Why weren't aquatic fauna and flora analyzed for Radium-226/228 and Actinium-227 during the RI/FS sampling? Radium is a contaminant of concern in sediments along Paddys Run and has been detected in the Great Miami River at levels equalling the MCL, making it available for uptake by the aquatic community. Actinium-227 is currently being discharged into the Great Miami River at approximately 200% of the DOE DCG thus warranting concern as to its effects on aquatic biota.

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RESPONSE: Aquatic flora and fauna were sampled under the provisions of the biological resources sampling plan of the RI/FS Work Plan (Revision 3). This plan provides for the analysis of three indicator parameters, isotopic uranium, strontium, and cesium for each biological sample. A more extensive list of radiological parameters, including radium-228, are to be analyzed if elevated concentrations of any of the indicator parameters are detected. Of 13 vegetation samples collected in wetland areas, only one grass root sample collected in the waste pit area had a high concentration of uranium in 1987 (31.3 pCi/g). The uranium concentration detected in another sample subsequently collected from the same area in 1988 was 5.1 pCi/g. Therefore, no further analysis was performed. Furthermore, radium was not analyzed in faunal samples because none of the indicator parameters were detected at elevated concentrations in any of the 34 macroinvertebrate and fish samples collected from Paddys Run and the Great Miami River.

Analysis of biological samples for actinium-227 is not provided for in the biological resources sampling plan. Actinium-227 was not anticipated to be a radionuclide of concern at this site because it is a decay product of uranium-235, an isotope usually found at low concentrations, when detected. Thus, actinium-227 was not expected to be found at concentrations high enough to have a biological or ecological impact, and therefore, no analysis of actinium-227 was performed.

It is important to note that the biological sampling took place in 1987, with additional sampling in 1988. Radium concentrations in surface water and sediments reported in the WMCO Environmental Monitoring Reports were relatively low at that time. Elevated radium concentrations were not detected

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in isolated samples from Paddys Run and the Great Miami River until 1988. In addition, the elevated actinium-227 discharge levels were also reported in the 1988 WMCO Environmental Monitoring Report. Therefore, at the time of biological sampling it was impossible to anticipate that radium and actinium would become possible biological contaminants of concern.

6. PG. ES-2
 OHIO EPA
 COMMENT:

Alternative 6, as given here, is incorrect. According to Table 6-1, Alternative 6 includes extraction and discharge for groundwater, and excavation, treatment, and on-site disposal for sediments/soils.

RESPONSE: **Agreed. The text will be edited to include "treatment" in the description of Alternative 6.**

7. PG. 1-6, PARAGRAPH 2
 USEPA

COMMENT: **The definition of media included in Operable Unit 5 (OU5) seems too limited in scope. Specifically, it appears that the initial screening of alternatives (ISA) report excludes perched groundwater and subsurface soils. These contaminated media should also be included in the ISA report.**

RESPONSE: **See response to Comment 1.**

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8. PG. 1-7, PARAGRAPH 2

USEPA

COMMENT: The remedial action objectives developed in the Development of Alternatives Document (DOAD) are not sufficiently developed to meet the intent of the national contingency plan or the EPA guidance document. The remedial action objectives in the DOAD are not contaminant specific and do not list specific levels. The NCP requires that remedial action objective include preliminary remediation goals. Preliminary remediation goals are expressed in terms of contaminants, exposure routes and receptors, acceptable contaminant level or range of levels for each exposure medium, and specified point of compliance where the remediation goal will be measured.

RESPONSE: The guidance documents recognize that remedial action objectives are generally refined as the feasibility study is finalized, and that remediation goals should be determined on the basis of the baseline risk assessment and the evaluation of risks associated with each alternative. Compliance with the accelerated schedule of the FMPC RI/FS dictates that the feasibility study proceed prior to the completion of the baseline risk assessment, and the evaluation of risks associated with each alternative occur as part of Task 13, "Detailed Analysis of Alternatives." In addition, the Consent Agreement acknowledges that the determination of ARARs is an iterative process that can continue even after the feasibility study is completed.

Accordingly, postponement of establishing specific remedial action goals and ARARs until later tasks in the feasibility study process does not adversely

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affect the overall technical quality of the feasibility study and is consistent with the approach set forth in the guidance documents.

9. PG. 2-1, PARAGRAPH 3

OHIO EPA

COMMENT: The reference to the Great Miami River flows should also include: **minimum flow, 7-day 10-year low flow, and maximum flow.**

RESPONSE: The Great Miami River has minimum and maximum flow rates equal to 155 cfs. and 108,000 cfs., respectively. In addition, the 7-day 10-year low flow equals 410 cfs. This information will be incorporated into the text in Section 2.1.1, Great Miami River.

10. PG. 2-3, PARAGRAPH 2

OHIO EPA

COMMENT: **Add the number of overflows that have occurred since the storm water retention basins were put into service.**

RESPONSE: The SWRB was put into service on October 25, 1986. Since that date, it has overflowed seven (7) times. This has been added to the text. The dates and quantities of those overflows are listed below:

	<u>Date</u>		<u>Quantity</u>
1)	11/26-27/86	-	0.312 Mgal
2)	12/1-3/86	-	1.838 Mgal
3)	7/13/87	-	0.076 Mgal
4)	2/1-4/88	-	1.602 Mgal
5)	3/31/89	-	0.016 Mgal
6)	4/4/89	-	0.582 Mgal
7)	5/17-18/90	-	0.618 Mgal

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11. PG. 2-9, PARAGRAPH 1

OHIO EPA

COMMENT: **Typographical error "deciderous woodlands" should be changed to "deciduous woodlands".**

RESPONSE: **Agreed. The text will be changed to "deciduous woodlands".**

12. PG. 2-9, PARAGRAPHS 1 And 3

OHIO EPA

COMMENT: **The first paragraph states the FMPC contains eight species of mammals, while the third paragraph lists thirteen species of mammals on FMPC. This inconsistency needs to be corrected.**

RESPONSE: **The number of mammal species recorded onsite is actually twenty. The text will be changed to reflect this.**

13. PG. 2-11, LINE 1

OHIO EPA

COMMENT: **For correctness, the reference to the "town of Hamilton" should be changed to the "city of Hamilton".**

RESPONSE: **Agreed. The text will be changed to the "city of Hamilton".**

14. PG. 2-12, SECTION 2.6.2

OHIO EPA

COMMENT: **Discuss the current meteorological data collected at FMPC. How does this data compare to data from Cincinnati and Dayton?**

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RESPONSE: Information on the current meteorological data collected at the site has been added to the text.

15. PG. 3-1, BULLET 3
 OHIO EPA

COMMENT: Because this is an RI/FS document, the third bullet which cites the RI/FS data base should be listed first, followed by RCRA data and then the annual environmental monitoring report, etc.

RESPONSE: The text will be changed to reflect the intent of the comment.

16. PG. 3-2, PARAGRAPH 1
 OHIO EPA

COMMENT: The ISA report should specifically state the assumptions used to set levels of contamination which may be of concern. Specific cleanup criteria that form the basis of identifying remedial action technologies should also be stated.

RESPONSE: The first paragraph on page 3-2 will be revised to clarify the assumptions used to set levels for cleanup criteria.

17. PG. 3-3, PARAGRAPH 1
 USEPA

COMMENT: The use of perched groundwater should more accurately be stated as "...within sand lenses in the till and not currently being used as a source of drinking water for human consumption near the FMPC."

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RESPONSE: Agreed. The sentences will be changed to read as follows: "The perched water zone, as monitored by a network of wells designated as the 1000 Series wells, is contained within sand lenses in the till and not currently being used as a source of drinking water for human consumption near the FMPC".

18. PG. 3-3, PARAGRAPH 1
USEPA

COMMENT: The statement "the evaluation and remediation of this perched water is being addressed within other operable units" is not accurate. The ISA reports for OU1 and OU4 (areas which have extensive groundwater contamination in the till unit) does not include remedial actions for perched groundwater in the till unit. Operable Unit 5 is defined in the 1990 Consent Agreement as all environmental media including groundwater (whether perched or part of the regional aquifer).

RESPONSE: Flexibility in the feasibility study is required with respect to underlying soils and perched groundwater, and berm materials. This situation relates to the integration of Operable Units 1, 2, 3, and 4 and Operable Unit 5.

Operable Unit 5 differs from the other operable units (and other generic feasibility study scenarios) in that this operable unit is a collection of contaminated or potentially contaminated environmental media (principally surface water, stream sediments, soils, and groundwaters in geologic formations with varying hydraulic conductivities) without a waste source which would result in continuing (future) releases. Operable Units 1, 2, 3, and 4 include the sources of continuing releases, namely, concentrated waste

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materials (e.g. the silo residues, waste pit contents, solid waste units, etc). (An exception to this continuing release scenario would be contaminated soils and perched groundwater from prior production activities which have been included in Operable Unit 3.

While Operable Unit 5 specifically addresses environmental media, certain environmental media (most notably soils and perched groundwaters) have been included in the alternatives developed for the "source" operable units. This inclusion of environmental media in the remedial actions for the source operable units is in conformity with EPA guidance and is appropriate for both waste removal and source control remedial alternatives.

In the case of removal-type alternatives, the remediation of environmental media can be achieved cost-effectively in conjunction with removal of the waste. This is most apparent for the waste pits or "cells" of Operable Units 1 and 2 where surrounding berms, soils, and perched zones of groundwater are in contact with the wastes. It is also true for Operable Unit 4 given the structural relationship between the waste containment silo and the surrounding berm soils.

In the case of source control alternatives, the relationship between waste and surrounding environmental media is not as apparent. Generally, given the longevity of the contaminants of concern, if in situ options are acceptable from a risk perspective, the contribution to the risk from surrounding contaminated media will not represent an additional significant risk.

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Another reason for including some environmental media in the source operable units is the uncertainty surrounding the quantities and concentrations of contaminants within environmental media near waste sources. This uncertainty will most likely continue until the remedial alternatives are selected for the "source" operable units. This inclusion of environmental media in the source operable unit allows Operable Unit 5 to continue concurrently with the source operable units.

19. PG. 3-3, PARAGRAPH 2

OHIO EPA

COMMENT: DOE Order 5400.5 is cited as (DOE 1990) in the paragraph but is not presented on the List of References page in Section 8.

RESPONSE: Agreed. DOE Order 5400.5 cited as (DOE 1990) will be included in the List of References found in Section 8.

20. PG. 3-3, PARAGRAPH 2

OHIO EPA

COMMENT: The use of average inorganic containment concentrations across 2000-, 3000- and 4000- series wells is not helpful in determining isolated areas of contamination. Averages by specific wells would be more useful in determining localized areas of groundwater contamination above response levels. It should also be noted that within the central 2000-series wells, the concentrations of combined Radium-226/228 and Barium averaged just below the respective MCLs for these constituents (See Table A-3). Average concentrations of Radium-226 and 228 were consistently above detection limits and near the MCL in the 3000 and

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4000 series wells (See Tables A4 through A7). This suggests these substances may be contaminants of concern and should be recognized in the risk assessment.

RESPONSE: Generally disagree with the comment concerning the presentation of average constituent concentrations in the aquifer. The aquifer data are being evaluated by portions of the aquifer that exhibit common flow within each of the well series. This is being done to examine trends in contamination; constituent distributions, and the extent of contamination phenomena. This approach also facilitates the prediction of potential future migration of constituents through the aquifer. Specific wells are considered in instances where constituents exhibit more restricted or isolated contamination patterns. Where localized areas of aquifer contamination are present, consideration of specific wells will facilitate estimation of potential receptor exposures from pathways that may be unique to those wells. The above-background detections of constituents other than uranium in aquifer data are noted. These detections are being considered in the risk assessment as the constituents of concern are being identified for the RI. Also, detailed data by well, are being presented in the RI report.

21. PG. 3-3, PARAGRAPH 2

OHIO EPA

COMMENT: What about organics in DOE wells that appear to be related to the PRS. These chemicals are still part of the DOE "Site" and some mention of this situation should be made. [DOE well 2094].

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RESPONSE: Paddy's Run RI/FS is determining the extent and suite of organics in the environment as a result of operations of the industries along Paddy's Run Road. The main portion of the uranium contamination appears at this time to be east of the Paddy's Run Road Site plume. As the data from that investigation becomes available, they will be incorporated into the selection of alternatives process.

22. PG. 3-4, SENTENCE 1

OHIO EPA

COMMENT: Uranium should not be the only contaminant of concern for the regional aquifer. For example, volatile organic compounds, nitrates, and heavy metals need to also be considered as contaminants of concern at the site. The text states that no VOCs were detected above the MCLs, however PCE was detected in samples collected from monitor well 2021 at 11 ppb which is greater than the Primary Drinking Water Standard of 5 ppb (1/24/90 revised MCLs).

Parameters such as Total Dissolved Solids, Sulfates, Chlorides, etc. should be considered as parameters of concern because elevated levels of these constituents can cause [Gradation of natural resources and may exceed Secondary Drinking Water Standards. Also, the sources for these parameters may result in plumes of contaminated groundwater which do not migrate in the same direction or rate as uranium.

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RESPONSE: Generally agree with comment. Above-background detections of constituents other than uranium in aquifer data are being considered in the risk assessment as the constituents of concern are being identified for the RI.

All information is not present at this time to include in the Initial Screening document but will be incorporated in both the RI and final FS documents.

23. PG. 3-4, PARAGRAPH 1

OHIO EPA

COMMENT: Simply stating that organic contaminant levels do not exceed MCLs is misleading since few of the contaminants found have MCLs. Significant contamination exists in several 2000- and 3000- series wells by organic constituents other than those having MCL's (i.e., acetone and cyclohexane). Such levels of contamination need to be recognized, included in the risk assessment, and remediated. In addition, DOE should also compare parameters detected to proposed MCLs and MCLGs, not merely restrict its comparison to MCLs. There is also some apparent inconsistency between the various operable units over the use of 25% of existing MCLs as action levels for each operable unit. DOE should explain why Operable Unit 5 is using MCLs when Operable Units 1, 3 and 4 are using 25% of the MCL.

RESPONSE: The constituents of concern for OU5 are being developed in the risk assessment for the RI. In the risk assessment, proposed MCLs and MCLGs are being considered in addition to MCLs for comparison with detected levels of constituents.

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The MCLs and other remedial cleanup criteria must be applied to the entire site in order for the remediation of the site to be health protective. In order to ensure that site-wide cleanup criteria are not exceeded it is necessary that each operable unit work with a fraction of the site-wide criteria in instances where there may be contributions to the same exposure pathways from other operable units. The establishment of remedial action goals for Operable Unit 5 must await the determination of potential contributions from other operable units that may combine with exposures from OU5.

24. PG. 3-4, PARAGRAPH 2

USEPA

COMMENT: The data presented in Tables A-8 through A-10 indicate there are two areas of low but persistent volatile organic compound (VOC) contamination. These concentrations are reported to be below the maximum concentration levels. Additional information needs to be provided to support the conclusion presented in the ISA report that the VOC contamination has been adequately characterized and that remedial response actions for VOC contaminated groundwater are not necessary. At a minimum, this information should include the location of all wells sampled for VOCs (as well as those not sampled for VOCs) and the VOC analytical results for each sampling round.

RESPONSE: Tables A-8, A-9 and A-10 will be updated to include all of the detected organic compounds in the groundwater by RCRA and RI/FS sampling programs. The specific source of the data is from RI/FS sampling, Round 1 (1988/2nd quarter) through Round 6 (1989/3rd quarter); RCRA sampling, Round 1 (1985/3rd quarter) through Round 6 (1987/4th quarter); and results

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from RCRA sampling program 1989/2nd quarter through 1989/4th quarter. The location of all of the wells sampled for VOC analysis will be shown in Figures 3-1, 3-2, and 3-3.

25. PG. 3-4, PARAGRAPH 3

USEPA

COMMENT: In addition to the two areas of groundwater contamination monitored by the "2000-series" wells, the ISA report should also address elevated uranium levels present in the eastern portion of the facility. Well 2013 has displayed an increasing trend in uranium concentration from 1 ug/L in sampling round 1 to 36 ug/L in sampling round 4 (no analytical results were made available to U.S. EPA for sampling rounds 5 through 8).

In addition, Well 3013 also showed an increasing trend in uranium concentration from 4 to 490 ug/L during the same sampling periods. Finally, Well 4013 detected uranium at a concentration of 86 ug/L in sample round 5.

Uranium concentrations in groundwater samples collected from Well 3108 are also above 30 ug/L for each of the sampling round reported and should be included in the area of concern described in the ISA report.

RESPONSE: Monitoring well numbers 2013, 3013, and 4013 do not display an increasing trend in the concentration of uranium. The uranium levels detected at concentrations greater than 30 ug/L are suspected outlier results. The data

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indicates that the uranium trend in monitoring well numbers 2013, 3013 and 4013 is level and low, except for one high concentration (greater than 30 ug/L of U-total) in each well. The concentrations of uranium found in these wells range from less than 1 ug/L to 12 ug/L. In well numbers 2013 and 3013, peak values of 36 ug/L and 490 ug/L are considered outliers because duplicate sampling results (<1 and 4 ug/L, respectively) shows 36 ug/L and 490 ug/L to be outside of the main group of data for these monitoring wells. In well number 4013, 89 ug/L is suspected of being an outlier value because it does not follow the historical trend of data for uranium detected at this well. The peak uranium values are attributed to sampling problems.

We agree with the comment concerning monitoring well 3108. Recent sampling data shows that two (2) analytical results are greater than the action limit of 30 ug/L for uranium. The text and Figure 3-2 will be changed to reflect this information.

A proposal for new wells in the vicinity of location 013 is in preparation.

26. PG. 3-8, PARAGRAPH 1

USEPA

COMMENT: Tables in Appendix A should be expanded to present complete analytical data for soil samples. While the summary tables in Appendix A are helpful they do not support the conclusions asserted in this section.

RESPONSE: The complete analytical data that is currently available for the soil samples is summarized in Appendix A. Data originated from the WMCO

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Environmental Monitoring Reports-which is available as a source or reference for the EPA to locate the raw data, and the RI sampling. The complete results will be presented in the RI report.

27. PG. 3-8, PARAGRAPH 2

OHIO EPA

COMMENT: Areas of soil where uranium levels exceed background are considered contaminated and should be considered due to their potential to redistribute contaminants to other media. Action levels will be determined through a complete risk assessment, thus areas of concern cannot be determined until the risk assessment has been completed and approved. As far as the use of 35 pCi/g as a cleanup level for soils around Manhole 180 or its use to identify soil areas of concern, no USEPA or Ohio EPA approval has been given regarding the acceptability of this level for long-term clean-up of the FMPC site.

RESPONSE: Constituents of concern and areas of concern are being refined in the risk assessment for the OU5 RI. In the risk assessment, the potential redistribution of above-background levels of constituents in soils to other media is being evaluated. In the absence of established standards for constituents in soil or risk-based cleanup levels, the 35 pCi/g level is used in the Task 12 report; although neither U.S. EPA nor OEPA has approved this level as cleanup criteria in soil.

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28. PG. 3-8, PARAGRAPH 3
USEPA

COMMENT: With the exception of a 5-foot buffer zone around the waste pits the ISA report for OU1 did not consider subsurface soils. It also was not clear from the ISA report for OU4 if subsurface soil would be addressed as part of the feasibility study (FS) for that specific OU. DOE indicated during the OU4 ARARs meeting that subsurface soil would be addressed as part of OU5. Either subsurface soils should be addressed in this ISA report or the other ISA reports should be expanded.

RESPONSE: See response to Comment 2.

29. PG. 3-8, PARAGRAPH 3
OHIO EPA

COMMENT: The third sentence implies that Tables A-12 and A-13 indicated specific areas of concern. However, these tables do not indicate specific locations of samples. Therefore, the sentence in the report should be reworded.

RESPONSE: Soils in the vicinity of the out-of-service incinerator, in addition to those in a plume extending north of this facility are being considered as part of Operable Unit 3. The text in section 3.1.2, along with Tables A-12 and A-13 have been modified to reflect this.

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30. PG. 3-9, PARAGRAPH 1

USEPA

COMMENT: The ISA report should provide sufficient information concerning the location and radionuclide concentration of soil samples outside the FMPC boundary.

RESPONSE: For surface soils within Operable Unit 5, there are no areas of concern outside the FMPC boundary and five (5) areas of concern within the property boundary. The soil samples outside the FMPC boundary include IT Litigation soil data and soil results from the WMCO Environmental Monitoring Reports. The IT Litigation soil data will be discussed in detail in the ISA text. This data includes approximately 400 soil samples that were collected within a 5 mile radius of FMPC. The soils data from the WMCO Environmental Monitoring Report are reported in Tables A-12 and A-13.

31. PG. 3-9, PARAGRAPH 2

OHIO EPA

COMMENT: Since soils with elevated levels of uranium were identified along the southern boundary of the site, additional soil samples should have been taken in this area during 1988 and 1989 in order to further delineate this contamination.

RESPONSE: Although one sample analyzed for uranium had a value of 23.8 pCi/g, neighboring samples had lower concentrations. Sampling locations were changed in the Environmental Monitoring Program in 1988 and the location with the 23.8 pCi/g level of uranium was eliminated from the program.

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Several sampling locations along the southern boundary were however, included in the RI/FS sampling program.

32. PG. 3-9, PARAGRAPH 2

OHIO EPA

COMMENT: Explain what is meant by "relatively low".

RESPONSE: The term "relatively low" will be qualified with a concentration range.

33. PG. 3-9, PARAGRAPH 4

OHIO EPA

COMMENT: Identify possible areas of concern for Thorium 230 in soils. What levels of uranium are also present in these soils?

RESPONSE: Levels of uranium have been identified for soils with Operable Unit 5. No areas of concern for Thorium 230 have been identified for this operable unit.

34. PG. 3-10, FIGURE 3-4

OHIO EPA

COMMENT: From the legend in this figure, it is unclear where the southfield area fits into the operable unit scheme.

RESPONSE: Agreed. The legend in Figure 3-4 will be corrected.

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35. PG. 3-11, PARAGRAPH 1

OHIO EPA

COMMENT: Page 3-11, First Paragraph: The statement that the "only radionuclide that has routinely been present above detection limits has been uranium" is misleading and should be corrected". Strontium-90 has been found in samples from the Great Miami River above the detection limit for three out of four years between 1985 and 1988, during the Environmental Monitoring program (see Table A-16). Also, Radium-228 was detected at concentrations above detection in 1988 and 1989 during the RI/FS sampling of surface water, both times equalling the MCL for combined Ra-226/228 (see Table A-17).

RESPONSE: The text has been modified to more clearly reflect the fact that in addition to uranium, strontium-90, radium-228, and technetium-99 have also been detected in surface water samples.

36. PG. 3-11, SECTION 3.1.3

OHIO EPA

COMMENT: This section should discuss background surface water concentrations of radiological parameters in the Fernald area.

RESPONSE: Radiological background levels in surface water in the Fernald area are presented below:

All Fission products	0 (assumed)
All transmutations and transuranic	0 (assumed)
Ra 226	0.5 pCi/l
Ra 228	0.5 pCi/l

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Th-230	1.0 pCi/l
U-234	1.0 pCi/l
U235/236	0.1 pCi/l
U-238	1.0 pCi/l

Fission products include Tc-99, Sr-90, Ru-106 and Cs-107.

Transmutations and transuranics include Np-237, Pu-238 and Pu-239/240.

All background levels will be thoroughly discussed in the RI report.

37. PG. 3-11, PARAGRAPH 2, LINE 4

OHIO EPA

COMMENT: Technetium 99 is a radiological parameter that has been routinely detected in effluent at concentrations above background. Is this statement correct?

RESPONSE: See response to comment 35.

38. PG. 3-11, PARAGRAPH 3

OHIO EPA

COMMENT: The Sentence beginning "An evaluation of the impacts ..." is incomplete. Clarification is needed. The point of the last sentence in this paragraph is unclear. It appears that DOE is trivializing the fact that above background concentrations of uranium were found in water from the storm sewer outfall ditch, comparing these concentrations to DOE discharge limits (set by themselves) and to concentrations found in outfall ditch samples from a period when DOE had little regard for the environment.

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RESPONSE: The sentence in question has been completed to read, "An evaluation of the impacts on environmental pathways associated with surface water discharged from the FMPC, including overflows from the SWRB, is being included in the RI report." The last sentence of the paragraph was not intended to trivialize the concentrations of uranium in the storm sewer outfall ditch, but was intended rather to show the effect of the retention basin. Regardless, this last sentence will be removed from the text.

39. PG. 3-12, PARAGRAPH 1

OHIO EPA

COMMENT: Figure 3.5 indicates Paddys Run sampling locations. The text indicates samples were taken downstream of the confluence with the storm sewer outfall ditch, and Figure 3.5 indicate results of any samples taken from this particular location. Why not?

RESPONSE: Data from surface water samples collected at location W8 are included in the Paddys Run results in Table A-16. A footnote referencing Figure 3-5 will be added to this table.

40. PG. 3-12, PARAGRAPH 1, LINE 6

OHIO EPA

COMMENT: "35 pCi/g" should this be 35 pCi/l?

RESPONSE: Agreed. The text will be changed to 35 pCi/l.

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41. PG. 3-14, PARAGRAPH 2

OHIO EPA

COMMENT: The statement that no identified metals exceed the MCL drinking water standards in Paddys Run or the Great Miami River is incorrect. Selenium was found at a concentration of 16.9 mg/l in Paddys Run above the MCL of 10 mg/l. The detection limit for selenium from Great Miami River samples was approximately three times the MCL thus making it impossible to determine if it was in excess of the standard.

RESPONSE: The concentrations reported on Tables A-19 and A-21 are in parts per billion not parts per million. Therefore, these concentrations are below the MCL of 10 parts per million.

42. PG. 3-16, PARAGRAPH 4

OHIO EPA

COMMENT: The 1990 Compliance Agreement states that all areas of contamination will be addressed under the RI/FS process and that by complying with the RI/FS process it will obviate the need for corrective action under other programs. Therefore, it will be necessary to address fugitive dust emission as part of the FS.

RESPONSE: Fugitive dust emissions will be addressed within the FS as related to specific actions, such as excavation, grading, etc., conducted during the implementation of remedial actions. The statement in the text was intended to mean that remedial actions on the stacks are not included in Operable Unit 5. The text will be revised to clarify this point.

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43. PG. 3-16, PARAGRAPH 4

OHIO EPA

COMMENT: The first sentence appears to be incomplete and requires clarification. It appears from Table A-33 that there are two locations for sampling milk, one of which is near the FMPC and one of which is approximately 30 km away. The text in this paragraph should be reworded as such.

RESPONSE: Milk was sampled in two areas. The text will be reworded to reflect this.

44. PG. 3-17, PARAGRAPH 2

OHIO EPA

COMMENT: The last sentence cites "Table A-36" when it should be "Table A-37". Were fish that were analyzed for radionuclides during RI/FS sampling based on a whole body analysis or with head, scales, and entrails removed, as is the case in the Environmental Monitoring sampling? If whole body analysis was not used, comparing levels found in macroinvertebrates to those in fish to determine if bioaccumulation is occurring is invalid. It is unclear why fish and other aquatic fauna were not analyzed for Actinium-227 and Radium-226/228. (Also see comment #5).

RESPONSE: The reference to Table A-36 is correct and remains unchanged.

Whole body analysis of samples was performed for all fish collected from both Paddy's Run and the Great Miami River except those catfish samples (from the Great Miami River) noted as "fillets" and "bones and entrails" in

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Table A-37. The eleven remaining fish samples are the basis of the statement regarding lack of evidence of biomagnification. A reference to whole body sample analysis will be added to the text for clarification.

With reference to Actinium-227 and Radium-226/228 analysis, please see comment 5.

45. PG. 3-19, PARAGRAPH 2

USEPA

COMMENT: The predicted uranium concentration in the groundwater when it reaches the eastern or southern boundary of the FMPC is of little practical use. The FS should include potential remedial alternatives for the on-site contaminated groundwater. The NCP states that maximum contaminant levels (MCLs) or maximum contaminant level goals (MCLGs) above zero should be relevant and appropriate requirements for groundwater that is or may be used for drinking water (55 Fed. Reg. 8754). Although an MCL for uranium has not been promulgated, DOE and EPA agreed that a "functional MCL" of 30 ug/L would be used at the FMPC. This functional MCL was established using the criteria present in the "to be considered" criteria of DOE Order 5400.5. The NCP states that MCLs or non-zero MCLGs apply to both areas within the facility boundary or areas covered by institutional controls. In addition, it is not appropriate to set alternative concentration limits (ACLs) for groundwater within the facility boundary because the NCP states that ACLs should only be used where

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active restoration of the groundwater to MCLs or non-zero MCLGs is not practicable.

RESPONSE: The FS does include remedial alternatives for on-site groundwater cleanup.

46. PG. 3-20, PARAGRAPH 4

OHIO EPA

COMMENT: DOE's assertion that above background concentrations of uranium within and outside the FMPC boundary are below the "level of concern" is premature. Pending the evaluation of these above background levels in the risk assessment, Ohio EPA does not feel that the 35 pCi/g value is acceptable for a "level of concern".

RESPONSE: If the risk assessment indicates a level of concern below 35 pCi/g, the alternatives will be expanded to include additional areas and volumes of soil. However, since no U.S. EPA standards have been established for uranium in soils, the level of 35 pCi/g is being used as adopted from the 1981 NRC Branch Technical Position Paper. This topic is scheduled for discussion with U.S. EPA and OEPA at a meeting regarding risk assessments at the end of October.

47. PG. 4-2, SECTION 4.2

OHIO EPA

COMMENT: Inhalation of contaminated groundwater from showering should also be added as an exposure pathway for groundwater. This can be a significant exposure route for volatile organics.

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RESPONSE: The pathway involving inhalation of contaminants released from shower water will be considered in the OU5 risk assessment as a potential exposure mechanism for volatile organics. This pathway, along with a universe of other pathways will be considered. It is expected that the showering pathway will be screened out as insignificant. This level of detail is not appropriate for inclusion into Chapter 4.0 of this document.

48. PG. 4-2, SECTION 4.2

OHIO EPA

COMMENT: A punctuation mark is missing after "Sediment release into surface water".

RESPONSE: A semicolon has been added after this statement on Page 4-2.

49. PG. 4-3, PARAGRAPH 1

OHIO EPA

COMMENT: The regional aquifer in the vicinity of FMPC encompasses areas outside the Sole Source Aquifer boundaries and should require protection for possible future use.

RESPONSE: The objective will be reworded as follows:

- Protect the groundwater for current and potential future users.

50. PG. 4-3, HUMAN HEALTH BULLETS

OHIO EPA

COMMENT: The first bullet should state as an additional objective the need to prevent the inhalation of volatile constituents in contaminated

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groundwater through showering. Also, in this bullet, emphasis should not be solely on the 30 ug/l uranium guideline (since it may not be an acceptable long-term cleanup level to Ohio EPA) or on the ability of groundwater to simply meet standards since other health and/or risk related cleanup criteria will be developed in the risk assessment where no standards exist or where standards are not sufficiently protective. In addition, a sixth bullet objective should be added here stating the need to prevent the ingestion of contaminated vegetation or animal products. One item which the RI may have overlooked is the need to collect samples of tissue from cattle/pigs for analysis of radionuclide contamination since uranium has a greater affinity for muscle and bones than milk.

RESPONSE: The bullet items on Page 4-3 include a list of primary remedial action objectives for protection of human health and the environment. A more comprehensive list of potential exposure pathways will be considered in the risk assessment for the OU5 RI. For example volatilization of organics in water used in the home and ingestion of produce and animal products contaminated by soil or water are being considered.

51. PG. 4-3, LAST PARAGRAPH
USEPA

COMMENT: Preliminary remedial action goals need to be established for soils and sediments. Although the risk assessment will eventually establish these remediation goals, target values (and assumptions) need to be proposed to determine the volume of material requiring remediation.

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RESPONSE: The development of remedial action goals for Operable Unit 5 constituents of concern must await further progress in the Operable Unit 5 RI and RA, and the development of a means for establishing operable unit specific goals that account for potential contributions from other operable units. Remedial action goals for Operable Unit 5 soils and sediments are to be derived as constituent concentrations that do not result in estimated human health risk in excess of acceptable risk presented in 40CFR300 (1×10^{-4} to 1×10^{-6}). Development of these remedial action goals must take into consideration potential contributions to the same exposure pathways from the same constituents originating from the other operable units so that site-wide risks do not exceed acceptable levels in 40CFR300.

52. PG. 4-12, PARAGRAPH 3
 USEPA

COMMENT: Paving the storm sewer outfall ditch should also be discussed in this section.

RESPONSE: Agreed. Paving the storm sewer outfall ditch will be included as a control/containment technology in Section 4.4.1.3.

53. PG. 4-15, SECTION 4.4.2.2
 OHIO EPA

COMMENT: The statement "data has shown soil contamination within the FMPC boundary only" is a misrepresentation of the data. Page 3-8 states that levels of uranium in the soil exist above background levels outside the FMPC boundary. Such misrepresentations need to be corrected. Contamination exists when levels are elevated significantly above

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background. Areas of concern should be defined based on the risk assessment.

RESPONSE: There are areas, both inside and outside the FMPC boundary, where uranium levels exceed background. However, concentrations in excess of background do not necessarily indicate areas which are of concern or where remedial action is necessary. No DOE or U.S. EPA standards have been established for uranium in soil. This action level will be established in conjunction with the risk assessment. These levels will be used when available. However, the NRC has established a concentration of 35 pCi/g of uranium activity in soils, which is the level generally used as a guideline for allowing the public to use the land. This level is adopted from the 1981 NRC Branch Technical Position Paper and will be used to identify soil areas of concern. A removal action was completed in the summer of 1989 to remove uranium-contaminated soils from the area around Manhole 180. The cleanup level used was 35 pCi/g.

The text will be changed to indicate "soils contaminated above the preliminary levels of concern."

54. PG. 4-16, LEFT COLUMN, ITEM 3

OHIO EPA

COMMENT: The words "CONTROL/CONTAINMENT" appears too low in this column, and as a result the Table implies that Vertical Barriers are an institutional action, while the text on page 4-15 identified Vertical Barriers properly as a control/containment option.

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RESPONSE: Agreed. The words "Control/Containment" will be moved to include vertical barriers.

55. PG. 4-16, RIGHT COLUMN, ITEM 2

OHIO EPA

COMMENT: Comment is incomplete. It currently reads "Potentially applicable in localized".

RESPONSE: Agreed. The text in Table 4-3 will be changed to read "Potentially applicable in localized areas of contamination".

56. PG. 4-21, SECTION 4.4.2.5

USEPA

COMMENT: This section should discuss the final disposition of treated soils and sediment. The type of disposal, or placement, may affect the implement or costs associated with each of the alternatives that uses treatment as a process option.

RESPONSE: Section 4.4.2.5, Treatment, discusses the various treatment options for surface soils and sediments. The final disposition of treated soils and sediments is covered in Section 4.4.2.6, On-Site Disposal and Section 4.4.2.7, Off-Site Disposal.

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57. PG. 4-25, RIGHT COLUMN, ITEM 4

OHIO EPA

COMMENT: As per the text on page 4-21, there is only one removal option available for soil, and that action is "Mechanical Excavation". Table 4-4 implies there are two options, "Excavation" and "Mechanical".

RESPONSE: Agreed. "Excavation" and "Mechanical" will be changed to "Mechanical Excavation" in Table 4-4.

58. PG. 4-26, RIGHT COLUMN, ITEM 4

OHIO EPA

COMMENT: Similar to previous comment. Table 4-5 implies there are three options for removal, but in fact there are only two ("Mechanical Excavation" and "Dredging").

RESPONSE: Agreed. Under the items for Process Option in Table 4-5, "Excavation" and "Mechanical" will be changed to "Mechanical Excavation".

59. PG. 5-3, TABLE 5-1

OHIO EPA

COMMENT: The Capital Cost and O & M cost of ion exchange are both listed as "moderate" in this table, but are both listed as "high" in the text on page 5-14.

RESPONSE: The text in Section 5 and Table 5-1 will be compared and rechecked to ensure that they are consistent.

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60. PG. 5-7, PARAGRAPH 2, FIRST BULLET

OHIO EPA

COMMENT: The effectiveness of the paved stream technology is short-sighted since the true source of contaminants is not being controlled, only a pathway is controlled. This will only result in contaminants entering another media (i.e, Great Miami River). Removal of the actual source of contaminants flowing into Paddys Run is more effective and would not require the continued maintenance of the paved stream. Therefore, a ranking of "low" may be more appropriate for this process option.

RESPONSE: Agreed. Effectiveness (previously rated moderate) in Section 5.2.3.2, Alter Natural Drainage System, will be changed to "low" based on the above information.

61. PG. 5-9, SECTION 5.2.5.1, FIRST BULLET

OHIO EPA

COMMENT: The words "as well as uranium" should be replaced with "including uranium".

RESPONSE: Agreed. The sentence will be changed to read, "The biological exchange resin has been proven effective in removal of metals, including uranium, from groundwater; however, it is a relatively new commercial process.

62. PG. 5-12, SECTION 5.2.5.5, THIRD BULLET

USEPA

COMMENT: The cost of ion exchange is listed in Table 5-1 as moderate not high as indicated in this section.

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RESPONSE: The cost of ion exchange listed in Table 5-1 as "moderate" will be changed to "high" so that the table and text are consistent.

63. PG. 5-15, PARAGRAPH 1

USEPA

COMMENT: Further discussion is needed to justify the selection of ion exchange over precipitation for the process option representative of this technology. Treatment of contaminated groundwater by precipitation is described in the text as equally effective and implementable as the ion exchange process option and has lower capital and O&M cost compared to treatment by ion exchange.

AND

OHIO EPA

COMMENT: The text states that ion exchange is selected as the representative treatment process, but gives no explanation or justification for this selection. This is significant because several of the other treatment options appear to be quite viable.

RESPONSE: Ion exchange and the precipitation treatment process have been reevaluated for effectiveness, implement, capital costs and O&M costs. Additional information has been added to justify the selection of ion exchange over precipitation as the representative process option for the treatment of contaminated groundwater.

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64. PG. 5-15, PARAGRAPH 1

USEPA

COMMENT: The ease of implementation and low cost criteria seem to be overstated. Precipitation of uranium contaminated water is characterized as a difficult, cumbersome, and costly operation requiring complex chemical separation. Furthermore, the precipitation process is not adaptable to automatic control, and most plants currently operate manually (EPA document 540/2-88/002 -- Technological Approaches to the Cleanup of Radiologically Contaminated Superfund Sites).

RESPONSE: Agreed. The precipitation process for the treatment of uranium has been reevaluated. Implement (previously evaluated high) has been reevaluated to "moderate" due to close, manual control of this process operation and difficulty with chemical separation. O&M costs (previously evaluated low) have been reevaluated too "high" due to required chemicals, sludge treatment and disposal costs. The text will be edited to reflect these changes.

65. PG. 5-15, SECTION 5.2.6

USEPA

COMMENT: The costs presented in each of the subsections sometimes does not agree with those listed in Table 5-1. The text and table should be revised to be consistent.

RESPONSE: Agreed. The text and table will be rechecked to ensure that they are consistent.

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66. PG. 5-15 TO PG. 5-17

OHIO EPA

COMMENT: Implement of discharge is confusing. Implement of building a new pipeline is rated as "high" when the water is treated but only moderate when the water is untreated. Implement of using the existing pipeline is rated as "moderate" when the water is treated but "high" when the water is untreated. This is an inconsistent analysis.

RESPONSE: The implement of building a new or using an existing pipeline when the discharge is treated or untreated will be rated at "moderate" for all cases. The text in Sections 5.2.6.1, 5.2.6.2, 5.2.6.3 and 5.2.6.4 will be edited to reflect these changes.

67. PG. 5-16, SECTION 5.2.6.2, SECOND BULLET

OHIO EPA

COMMENT: There is an incomplete sentence that reads "permit". The intended words or meaning are not obvious. Also, it is unclear why implement of this option is only "moderate" when the implement of a new pipeline is rated as "high". Is it the case that repairs to an existing pipeline require significantly greater effort than installing a brand new pipeline?

RESPONSE: The incomplete sentence will be changed to read as follows: "However, this option will require modification of the existing NPDES permit". For clarification of the implement rating, see comment #66.

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68. PG. 5-15, SECTION 5.2.6.2, SECOND BULLET

OHIO EPA

COMMENT: Please clarify whether modifications and repairs to the existing effluent pipeline are currently being made or will the be made only if this alternative is used. Will the repair on the pipeline require remediation of soils possibly contaminated by faulty piping and will this delay the use of this alternative? Also, in the third sentence, either an extra word was added to this sentence or a sentence was left out beginning with "... and security. permit." This requires correction.

RESPONSE: The planned repairs will not require remediation of soils surrounding the pipeline because contaminant concentrations in the surrounding bedding material along this pipe section were found to be far lower than the proposed cleanup criteria of 35 pCi/g total uranium. The results from the pipe integrity testing indicate that the effluent pipe has the potential for unacceptable leakage (i.e. exceeding industry accepted standards) in the pipe section between MH 179 to MH 180. Two methods of repair for this section, involving either the "sliplining" method or the epoxy resin lining method, are currently being investigated. The DOE will repair the section of pipe between MH 179 and MH 180 using one of these two methods. This work will be completed regardless of the alternative selected. These actions will not delay the use of the effluent line by this alternative.

A sentence was omitted, and has been included as "However, this option will require modification of the existing NPDES permit."

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69. PG. 5-17, SECTION 5.2.6.4, FIRST BULLET

OHIO EPA

COMMENT: The effectiveness of this alternative is also reduced due to the increased loading of uranium into the Great Miami River. It may also result in the continued noncompliance of FMPC with DOE's DCG for uranium, since some concentrations of uranium within the plume may exceed 400 ug/l.

RESPONSE: Agreed. The effectiveness of discharging untreated groundwater into the Great Miami River is reduced due to the increased loading of uranium into the river. This information will be added to the text in Section 5.2.6.4.

70. PG. 5-17, SECTION 5.2.6.4, SECOND BULLET

OHIO EPA

COMMENT: As with the case where untreated water is discharged via a new pipeline, public and agency opposition should be expected if untreated water is discharged via the existing pipeline. This should be added to this bullet item.

RESPONSE: Agreed. The following sentence will be added to the end of the implement bullet in Section 5.2.6.4: "Public and agency opposition to the discharge of untreated groundwater is expected."

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71. PG. 5-21, PARAGRAPH 1

USEPA

COMMENT: Explain why there may be difficulties in implementing deed restrictions if the only areas of soil contamination occur on property owned by the DOE. Table 5-2 should be revised if necessary.

RESPONSE: The implement criteria has been changed from moderate to high since contamination is within DOE property.

72. PG. 5-21, SECTION 5.3.2.2, SECOND BULLET

OHIO EPA

COMMENT: The statement "Currently, data show elevated soil contamination within the FMPC boundary only" is incorrect. See Comment #53.

RESPONSE: See response #53.

73. PG. 5-22, FIRST BULLET

OHIO EPA

COMMENT: In order to implement modifications within the channel of a stream (i.e., dredge or fill), a 404 permit may be required from the U.S. Army Corps of Engineers (USACOE). This involves the consent of various state and federal agencies.

RESPONSE: The impact on implementability as a result of the U.S. Army Corps of Engineers review will be considered. However, permits are not required, but substantive requirements must be met.

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74. PG. 5-22, SECTION 5.3.4, SECOND BULLET

OHIO EPA

COMMENT: A 404 permit may be required for the removal of sediments (dredge or fill) from a stream. See Comment #73.

RESPONSE: Refer to comment #73 for response to this comment.

75. PG. 5-23, SECTION 5.3.5

OHIO EPA

COMMENT: No explanation or justification is given for selecting soil washing as the representative treatment technology for soil and sediment (it is touched upon in Section 5.4.2, however).

RESPONSE: Soil washing was selected as the representative treatment option for incorporation into the remedial alternatives since the overall evaluation at this stage was slightly more favorable than either vitrification or solidification. This will be clarified within the text.

76. PG. 5-24, SECTION 5.3.5.2, FIRST BULLET

OHIO EPA

COMMENT: The text states that soil washing has been demonstrated to remove radionuclides; however, Table 5-2 states there is uncertainty for removal of uranium from soils using this process option. This discrepancy should be reconciled. In addition, the type of leaching solution should be identified because this will greatly impact the effectiveness, implement, and cost of this process option.

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RESPONSE: Soil washing is simple and relatively inexpensive and should require no major process development. It utilizes proven, commonly available mineral treatment technology. Soil washing has achieved some degree of separation with clay soil in pilot-plant testing. The leaching solution for the Westinghouse soil washing treatment process is ammonium carbonate. This information will be incorporated into the text in Section 5.3.5.2.

77. PG. 5-26, SECTION 5.3.5.5, FIRST BULLET

OHIO EPA

COMMENT: Under effectiveness DOE should at least mention the benefit of waste volume reduction that usually occurs with vitrification.

RESPONSE: Agreed. The volume of soil is reduced after vitrification treatment. This information will be incorporated into Section 5.3.5.5, Vitrification, of the text.

78. PG. 6-2, TABLE 6-1, COLUMN HEADINGS

OHIO EPA

COMMENT: Options 6 and 7, should say "ON-SITE disposal" rather than "DISPOSAL".

RESPONSE: Agreed. Table 6-1, Alternatives 6 and 7 will be changed to "On-Site Disposal."

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79. PG. 6-3, ALTERNATIVE 6

USEPA

COMMENT: Alternative 6 should include soil treatment in its title.

AND

OHIO EPA

COMMENT: Alternative six and alternative 2 are identical as written. Alternative six should include "Treatment for soils/sediments."

RESPONSE: Agreed. Alternative six in the text will read: Groundwater: Extract, Discharge; Sediments/Soils: Excavate, On-Site Treatment, On-Site Disposal.

80. PG. 6-4, SECOND BULLET

OHIO EPA

COMMENT: The DOE DCG for uranium in groundwater is 30 ug/l, not 33 ug/l as given here.

RESPONSE: Agreed. The concentration of 33 ug/L will be changed to 30 ug/L.

81. PG. 6-6, FIGURE 6-2

OHIO EPA

COMMENT: If Albright & Wilson's wells are shut down once the facility is connected to the alternate water supply, will the south plume then be drawn into the Ruetgers-Nease production well?

RESPONSE: No. Data acquired from Ruetgers-Nease shows that the Ruetgers-Nease production well pumps at a low rate of approximately 2.5 gallons per minute. This well is drawing water from near the bottom of the aquifer,

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which is beneath the contamination. Additionally, this low pumping rate does not provide the capacity to draw the contamination downward in the aquifer.

82. PG. 6-7, PARAGRAPH 3
 OHIO EPA

COMMENT: Page 3-4 states the DOE DCG for uranium in groundwater is 30 ug/l, not 33 ug/l as given here.

RESPONSE: Agreed. The text will be changed from 33 ug/L to 30 ug/L.

83. PG. 6-8, PARAGRAPH 4
 USEPA

COMMENT: The reference to Figure 3-5 should be changed to Figure 3-4.

RESPONSE: Agreed. The text will be changed to read Figure 3-4 instead of 3-5.

84. PG. 6-10, PARAGRAPH 2
 USEPA

COMMENT: The method of disposal needs to be stated to allow for cost comparison between remedial alternatives using on-site disposal and those which do not.

RESPONSE: The excavated sediments and soils can be disposed of in an engineered disposal facility.

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85. PG. 6-8, THIRD BULLET

OHIO EPA

COMMENT: Please clarify whether the eight pumping wells are additional wells or are four new wells in addition to the four already proposed under the South Plume EE/CA.

RESPONSE: The eight wells are intended to be in addition to the four wells proposed under the South Plume EE/CA. This will be clarified within the text.

86. PG. 6-8, LAST PARAGRAPH

OHIO EPA

COMMENT: The removal of sediments should not be based upon removing a given area but based upon the removal of soil until an acceptable target level of contamination is reached. Removal based on area may require removing too much sediment (that which is below the target level) or allow some areas of contamination above the target level to remain unremediated. Once again it is important to note that this action may require a USACOE 404 permit to allow the removal of stream sediments. This comment applies to all alternatives which remove sediments from the stream no matter what the final disposition of those sediments is.

RESPONSE: Agreed. For purposes of an estimation of the quantity of sediment to be removed from the site, an area calculation was given in the text. In the field, contaminated soil will be excavated until an acceptable target level of contamination is reached. Only substantive permitting requirements must be met.

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87. PG. 6-8, NEXT TO LAST PARAGRAPH

OHIO EPA

COMMENT: Reference should be made to Figure 3-4 and not Figure 3-5.

RESPONSE: Agreed. The text will be changed to read Figure 3-4 instead of 3-5.

88. PG. 6-9, THIRD PARAGRAPH

OHIO EPA

COMMENT: Reference should be made to Figure 3-4 and Figure 3-5. Also the text refers to "number[s] keyed to the following calculations for effective areas/volumes subject to removal [on this figure]". These are not apparent on Figure 3-4.

RESPONSE: Agreed. A keyed number showing the sampling locations for a volume reference in Section 6.2.2, Sediments/Soils, will be added to Figure 3-4.

89. PG. 6-11, SECTION 6.4.2, SECOND PARAGRAPH

OHIO EPA

COMMENT: This section should provide more detail on the requirements of shipping soils/sediments to an off-site disposal facility.

RESPONSE: Agreed. The contaminated soils and sediments can be transported to the DOE Nevada Test Site (NTS) for permanent disposal. As a condition of NTS disposal, no untreated wet, raw waste, or free liquids will be accepted. An additional NTS requirement is that the waste can be characterized as either mixed or low-level radioactive waste. If identified as mixed waste, it will only be accepted in a solidified form. Waste transport may be

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provided by truck or railroad and packaged in low specific activity (LSA) boxes. Radioactive waste from the FMPC is currently shipped to NTS; however, depending on the level of uranium in the material and whether any organics are present, the soil could qualify for disposal at other low-level disposal facilities in closer proximity to the FMPC. This information will be added to Section 6.4.2, Sediments/Soils.

90. PG. 6-12, FIRST PARAGRAPH

OHIO EPA

COMMENT: The removal, treatment and replacement of large pieces of soil/sediment from Paddys Run may require a USACOE 404 permit for both the removal and replacement of those soils/sediments.

RESPONSE: If this remedial alternative is selected, any permit required by the U.S. Army Corps of Engineers, state, and federal agencies will be investigated and substantive requirements will be met.

91. PG. 7-2, LAST PARAGRAPH

OHIO EPA

COMMENT: Alternative 2 will be ineffective in that it will not allow FMPC to discharge below the DOE DCG for uranium when the more highly contaminated (400 ug/L) portions of the plume are extracted. This alternative provides little long-term protection of the environment since the concentration of uranium discharged to the Great Miami River will only increase over time. Since uranium loading to the Great Miami River will only increase with this alternative, a score of "3" is unrealistic. A score of 1 or 2 would be more appropriate.

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RESPONSE: The details of this alternative are being assessed within the Detailed Evaluation of alternatives, however, the score for long-term protection of the environment will be changed from 3 to 2 as suggested.

92. PG. 7-4, LAST PARAGRAPH

OHIO EPA

COMMENT: As previously noted, the removal of sediments from Paddys Run may require a USACOE 404 permit. Once again this comment applies to all alternatives which would remove sediments from Paddys Run.

RESPONSE: Agreed. Refer to response #90.

93. PG. 7-5, LAST PARAGRAPH

OHIO EPA

COMMENT: The off-site disposal of sediments/soils will have an increased risk of human exposure due to the hazards of shipping. This should reduce the short-term effectiveness score below that of on-site disposal (such as Alternative 3). The long-term protection of human health and the environment of Alternative 4 would be superior to that of Alternative 3 since contaminated soils/sediments will remain on-site in Alternative 3 thereby posing potential long-term threats to human health and the environment.

RESPONSE: Agreed. The shipment of wastes off site creates an increased potential for exposure to additional populations. This comment has been taken into consideration and the short-term effectiveness of off-site disposal options has been reduced below that of on-site disposal options.

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Disagree. The long-term protection of human health and the environment is equally protective under either option. Whether the soil/sediments remain on site or are taken off site, they will be handled and disposed in accordance with all applicable regulations.

94. PG. 7-7, LAST PARAGRAPH

OHIO EPA

COMMENT: The modifications of the stream channel of Paddys Run as required by Alternative 8 again may require a USACOE 404 permit. Capping alternatives are probably less likely to obtain approval from the various state and federal agencies involved in the 404 permit process than would be an alternative which removed contaminated sediments from the stream. This should be considered in the implement rating for this alternative.

RESPONSE: Agreed. Capping alternatives are probably less likely to obtain approval from the various governmental agencies than would be an alternate which removed contaminated sediments from the stream. The agency approval scores in the implement sections of Alternatives 8 and Alternative 9 will be lowered to account for this information.

95. APPENDIX A, TABLES A-1, A-2 AND A-3

OHIO EPA

COMMENT: The unit of concentration in which mercury is reported should be "ug/L" rather than mg/L".

RESPONSE: Agreed. These typographical errors will be corrected.

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96. APPENDIX A, TABLE A-5

OHIO EPA

COMMENT: The values associated with Iron, Zinc, and pH are misaligned.

RESPONSE: Agreed. These typographical errors will be corrected.

97. APPENDIX A, TABLE A-6

OHIO EPA

COMMENT: The values associated with Iron, Lead, Zinc, Conductance, and pH are misaligned.

RESPONSE: Agreed. These typographical errors will be corrected.

98. APPENDIX A, TABLE A-7

OHIO EPA

COMMENT: The values associated with Iron, Lead, Zinc and pH are misaligned.

RESPONSE: Agreed. These typographical errors will be corrected.

99. APPENDIX A, TABLE A-8

OHIO EPA

COMMENT: Contamination has recently been found in monitoring wells 2095 (170 ug/L of 2,4-Dimethylphenol and 1 ug/L of 1, 1, 1-Trichloromethane) during sampling of this well as part of the Paddys Run Road Site RI/FS. Since this well is upgradient of the Paddys Run Road Site and downgradient of FMPC, DOE should begin to sample this well for

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volatile and semi-volatile Hazardous Substance List compounds to confirm this data.

RESPONSE: Well 2095 has been sampled by DOE for volatiles and semi-volatiles. These results have been added to Table A-8.

100. APPENDIX A, TABLE A-17

OHIO EPA

COMMENT: It appears that surface water sampling and analysis for Actinium-227 was overlooked in the RI/FS. Actinium-227 was discharged into the Great Miami River at approximately 200% of DOE's DCG. Sampling for Actinium-227 should be conducted on surface waters and sediments which drain the FMPC site.

RESPONSE: The analysis of surface water and sediment was conducted per the RI/FS Work Plan. Analysis for actinium-227 was not provided for in the work plan.

101. APPENDIX A, TABLE A-35

OHIO EPA

COMMENT: It would be appropriate to analyze deer muscle tissue for radionuclide contamination due to the potential contamination due to the potential human exposure pathway. Another recommendation would be to analyze raccoon and muskrat specimens for radionuclides (including radium and actinium) and other hazardous substances due to their close association with the aquatic community and its contaminants.

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RESPONSE: Agree. The consumption of deer meat (muscle tissue) is a potential human exposure pathway at this site. Because deer muscle tissue was not analyzed as part of the biological sampling program, a model will be developed to calculate expected radiological contaminant concentrations. These results will be presented in the RI as part of the ecological risk assessment.

Potential biomagnification was examined in Paddys Run and the Great Miami River by comparing radionuclide concentrations in macroinvertebrates and whole-body fish samples. There was no evidence of biomagnification of radionuclides in fish from either water body. Therefore, the analysis of species at a higher level in the food chain was not considered relevant.

102. APPENDIX B
OHIO EPA

COMMENT: This appendix is poorly organized and sections are out of order. For example, Section B.1.3 follows Section B.1.4 when it should precede it. Table B-1 is presented before it is even cited. These and other errors or omissions cited below must be corrected.

RESPONSE: The pages in Appendix B have been reordered.

103. APPENDIX B, TABLE B-1
OHIO EPA

COMMENT: 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 B-1 is ORC 6111 (prohibits pollution of "waters of the state"). The citation for Ohio hazardous

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waste treatment, storage, or disposal facility location standards is incorrect. The correct citation is: OAC 3745-54-18.

RESPONSE:

We agree with the comment that ORC 3767 and ORC 6111 should be added to the action-specific ARAR list of Table B-1. We also agree that the citation for Ohio hazardous waste treatment, storage, or disposal facility location standards is a correct location-specific standard.

ORC 3767 and ORC 6111 will be added to the action-specific ARAR list of Table B-1.

Citation "This Location Standards (OAC 3745-45018)" will be changed to "Ohio Location Standards (OAC 3745-54-18)" in Table B-1.

104. APPENDIX B, PAGE B-8

OHIO EPA

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

RESPONSE: We agree that proposed MCLs and MCLGs are criteria which should be considered during the evaluation of alternatives. Proposed MCL and MCLG will be added to the Federal TBCs list of Section B.1.3.

105. APPENDIX B, PAGE B-9

OHIO EPA

COMMENT: Not all portions of OAC 3745-9 apply exclusively to new wells intended for human consumption. For example, OAC 3745-5-10 covers the abandonment of test holes and wells and constitutes an action-specific

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state ARAR for remedial actions involving the installation of any borings or wells (whether for water supply or monitoring purposes) at the FMPC.

RESPONSE: The citation for OAC 3745-9 and the brief description and application was taken from the Ohio ARARs list provided to DOE by Ohio EPA. There is no reference to OAC 3745-5-10 on the Ohio ARARs list provided to DOE by Ohio EPA, therefore, this regulation was not included in Section B.1.2.

106. APPENDIX B, PAGE B-10, LAST BULLET

OHIO EPA

COMMENT: 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. Also, in this section on Ohio ARARs, the states's air pollution law should be cited (ORC 3704).

RESPONSE: Agreed. The statement that "specific criteria for chemical concentrations have so far only been established for Lake Erie and the Ohio River" has been eliminated from the text. Also, the state's air pollution law, ORC 3704 has been added to the list of state ARARs.