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**RESPONSE TO OHIO EPA TECHNICAL REVIEW COMMENTS ON THE  
OPERABLE UNIT 1 DEWATERING EXCAVATION EVALUATION  
PROGRAM TREATABILITY STUDY WORK PLAN RECEIVED JULY 15,  
1994**

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RESPONSES

**RESPONSE TO OHIO EPA TECHNICAL REVIEW COMMENTS ON THE  
OPERABLE UNIT 1 DEWATERING EXCAVATION EVALUATION PROGRAM  
TREATABILITY STUDY WORK PLAN  
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Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 1.1 Page #: 1-1 Line # Code: C

Original Comment #: 1

Comment: Paragraph #2 of this section states that radioactive waste consisting of naturally occurring radionuclides generated from uranium ore processing are stored in OU1. Not all of the radionuclides found in OU1 are naturally occurring. Please modify the text accordingly.

Response: Agree.

Action: Page 1-1, Section 1.1. Reference to "naturally occurring" radionuclides has been deleted.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 1.2 Page #: 1-2 Line #: 2 Code: C

Original Comment #: 2

Comment: This section states that Waste Pits 1, 2, and 3 were selected for the DEEP. Yet, no rationale is given in the text as to why these waste pits were selected over the other waste pits. Please explain.

Response: Comment Acknowledged. Initially, all of the waste units in Operable Unit 1 were considered for inclusion in the DEEP. However, as described in the text on Page 1-2, there were specific reasons that other pits were excluded. In addition, Waste Pits 1, 2, and 3 were, based on known information, judged to be adequate to provide representative information for the material requiring excavation. The waste pits selected for DEEP represent approximately 80 percent of the total material requiring dry mechanical excavation during final remediation.

Action: Page 1-2. The following text was added: "Initially, all of the waste units in Operable Unit 1 were considered for inclusion in the DEEP. The waste pits selected for DEEP represent approximately 80 percent of the total material requiring dry mechanical excavation during final remediation. However, there were specific reasons that the other waste pits were excluded. In addition, Waste Pits 1, 2, and 3 were judged to be adequate to provide representative information for the material requiring excavation based on known information."

Commenting Organization: Ohio EPA Commentor: OFFO  
Section #: 1.3.3 Page #: 1-3 Line #: 7 Code: C  
Original Comment #: 3

Comment: The third bullet cross-references a section in which the physical features of Waste Pits 1, 2, and 3 are described in further detail. The appropriate section number has been omitted. Please modify accordingly.

Response: Comment Acknowledged.

Action: The text was deleted in the rewrite of the DQO's, in response to U.S. EPA Comment #1.

Commenting Organization: Ohio EPA Commentor: OFFO  
Section #: 1.4.2 Page #: 1-5 Line #: Code: C  
Original Comment #: 4

Comment: This section states that magnetic anomalies were detected across 35% of Waste Pit #2. Please describe in further detail where these anomalies were detected as were the areas in the Waste Pit #1 discussion in Section 1.4.1.

Response: Agree. Magnetic anomalies were indicated across 35 percent of the waste pit. Anomaly maps were published in the Operable Unit 1 Final Remedial Investigation Report. EM data were evaluated over 70 percent of the pit. High conductivity values were found in the north central, south central, and far southwestern area of Waste Pit 2.

Action: **Page 1-7, Section 1.4.1.** The following text has been added: "Anomaly maps were published in the Operable Unit 1 Final Remedial Investigation Report. EM data were evaluated for more than 70 percent of the pit. High conductivity values were found in the northeast, southeast, and western areas of Waste Pit 1."

**Page 1-8, Section 1.4.2.** The following text has been added: "Anomaly maps were published in the Operable Unit 1 Final Remedial Investigation Report. EM data were evaluated for more than 70 percent of the pit. High conductivity values were found in the north central, south central, and far southwestern areas of Waste Pit 2".

Commenting Organization: Ohio EPA Commentor: OFFO  
Section #: 2.1.3 Page #: 2-2 Line #: Code: C  
Original Comment #: 5

**Comment:** Please explain the rationale for selecting sampling points around the anomalies in the waste pits. The goal of a treatability study is to see if preferred techniques will work on larger scale. Since the waste pit anomalies would have to be addressed in the future, no treatability data would exist regarding the areas identified by the magnetic anomalies.

**Response:** Agree. The text explaining the rationale for sample point selection was inaccurate. The role of waste pit heterogeneity, especially in regard to magnetic anomalies, should be clarified. DEEP sampling is being performed for geotechnical purposes. That is, the drilling and collection of the samples in question are designed to obtain data on the waste that requires evaluation relative to the waste's ability to dewater, support loads, and handle easily. From a geotechnical perspective, the controlling medium in such analyses will be the soil or sludge-like wastes, rather than solid debris. For this reason, the drilling will attempt to focus on areas where the geotechnical sampling program will not likely be disturbed as a result of debris. As an example, by avoiding areas where metals exist, the potential to contact a metal drum or beam with the SPT equipment is minimized. If the split spoon hits a metal object, then blow count data would be much higher and as a result, skewed for analysis. However, the new text should state that the sampling and trenching will be performed in areas with and without magnetic anomalies.

**Action:** Page 2-2, Section 2.1.3. The following sentence has been deleted: "The heterogeneity of the waste pit contents was a key consideration in selecting the number and locations of the DEEP sampling points."

The next sentence was revised to read: "Sampling points were selected to provide a maximum amount of data from a minimum amount of sampling locations, and to minimize disturbance to known magnetic anomalies in the waste pits."

The following text has been added: "Magnetic anomaly maps were consulted when sampling and trenching locations were selected. However, a comparison of the magnetic anomaly maps (provided in the Final RI Report for Operable Unit 1) with the sampling locations (shown in Figure 2-1) dewatering and trenching locations (shown in Figure 3-1) demonstrates that sampling and trenching will occur in areas with and without magnetic anomalies; wet excavation, but no drilling, will be performed in areas with magnetic anomalies. The sampling is for geotechnical purposes and encountering debris would skew results. From a geotechnical perspective, the controlling medium in such analysis will be the soil or sludge-like wastes rather than solid debris. For this reason, the drilling will attempt to focus on areas where the program will not likely be disturbed as a result of debris."

Commenting Organization: Ohio EPA Commentor: OFFO  
 Section #: 2.1.3 Page #: 2-2 Line #: Code: E  
 Original Comment #: 6  
 Comment: In the last sentence of this paragraph please change know to known.

Response: Agree.  
 Action: Page 2-2. "Know" has been changed to "known".

Commenting Organization: Ohio EPA Commentor: OFFO  
 Section #: 2.1.4 Page #: 2-3 Line #: 2 Code: E,C  
 Original Comment #: 7  
 Comment: Please delete the word drilling. Also, this sentence states that the approximate depth of the waste pit liners have been determined. Please include these liner depths in a discussion of the waste pit characteristics.

Response: Comment Acknowledged. The depths to the liners are discussed in Table 1-2, page 1-8. Additional maps can be provided if necessary.  
 Action: Page 2-3. The word "drilling" has been deleted. Reference to Table 1-2 was added, as follows: "Table 1-2 identifies the depth to the liner of each waste pit included in the DEEP."

Commenting Organization: Ohio EPA Commentor: OFFO  
 Section #: 2.1.5 Page #: 2-3 Line #: Code: C  
 Original Comment #: 8  
 Comment: The third bullet in this section is very run on and unclear as if words and/or additional sentences are missing. Please review and modify accordingly.

Response: Agree.  
 Action: Page 2-3. The last sentence of the section was reworded as follows: "Such a delay would be to the detriment of the Operable Unit 1 remedial design process and cause it to proceed at risk."

Commenting Organization: Ohio EPA Commentor: OFFO  
 Section #: 2.2.2.1 Page #: 2-5 Line #: Code: C  
 Original Comment #: 9  
 Comment: The third paragraph in this section states that existing information will aid in determining waste pit liner depth. Yet, Section 2.1.4 states that liner depths have already been determined. Please review and clarify which statement is correct and modify the text accordingly.

Response: Agree.  
 Action: Page 2-5. The referenced text was revised to state, "Pit cross-section....sampling, aided in identifying liner depth."

Commenting Organization: Ohio EPA Commentor: OFFO  
 Section #: 2.2.2.2 Page #: 2-5 Line #: Code: C  
 Original Comment #: 10

Comment: This section states that drill cuttings will be placed on plastic sheeting and returned to the excavation site. Please discuss what will happen to the cuttings once they have been returned to the excavation site.

Response: Agree. The cuttings will be returned to the excavation as backfill and compacted. Ultimately, the cuttings will be addressed as part of the full scale remediation of Operable Unit 1.

Action: Page 2-5, Section 2.2.2.2. The following has been added: "...backfill and compacted. Ultimately, the cuttings will be addressed as part of the full-scale remediation of Operable Unit 1."

Commenting Organization: Ohio EPA Commentor: OFFO  
 Section #: 2.2.2.2 Page #: 2-5 Line #: Code: E  
 Original Comment #: 11

Comment: Please change the second to last sentence in paragraph #1 to read "Grouting of completed boreholes will conform to (OAC) 3745-09-10(A).

Response: Agree.

Action: Page 2-5, Section 2.2.2.2. The OAC has been properly identified as "3745-09-10(A)".

Commenting Organization: Ohio EPA Commentor: OFFO  
 Section #: 2.4 Page #: 2-10 Line #: Code: C  
 Original Comment #: 12

Comment: Please add time of sample to the list of descriptive information described on sample labels.

Response: Agree.

Action: Page 2-10, Section 2.4. The phrase "date of sampling" has been revised to read "date and time of sampling".

Commenting Organization: Ohio EPA Commentor: OFFO  
 Section #: Figure 2-1 Page #: 2-21 Line #: Code: C  
 Original Comment #: 13

Comment: This figure is very light copy and was difficult to review in our copy. Please ensure a darker copy in the revised test.

Response: Agree.

Action: A darker copy has been included in the revised work plan.

Commenting Organization: Ohio EPA Commentor: OFFO  
Section #: 3.1.2.3 Page #: 3-3 Line #: Code: C  
Original Comment #: 14

Comment: The last sentence in this section appears to be incomplete. Please review and revise the text accordingly.

Response: Agree.

Action: Page 3-4, Section 3.1.2.3. The sentence was revised as follows: "After surveying to ensure no contamination exists above the FEMP Radiological Control Manual criteria, the boxes shall be transferred to the Plant 1 storage pad, or to another suitable hard-surface storage pad at the FEMP, in keeping with the Amended Consent Decree with the State of Ohio."

Commenting Organization: Ohio EPA Commentor: OFFO  
Section #: 3.1.2.4 Page #: 3-3 Line #: Code: C  
Original Comment #: 15

Comment: The DOE must ensure that a trench backfill technique will be implemented which will result in soil permeability that is equal or less than the permeability prior to excavation. Please modify the text accordingly.

Response: Agree. The waste will be returned to the excavation and compacted with the track-hoe bucket, if necessary. The cover material, which will be segregated from the waste, will be returned and again compacted with the track-hoe bucket to the greatest extent possible. Any remaining cover will then be added and further compacted by repeatedly driving the track-loader over the returned cover material. These compaction actions will return the soil permeability to a state that is equal to or less than that which previously existed.

Action: Page 3-3, Section 3.1.2.4. The following text has been added to the end of the first sentence: "and compacted with the track-hoe bucket, if necessary. The cover material will be returned and again compacted to the greatest extent possible with the track-hoe bucket. Any remaining cover will then be added and further compacted by repeatedly driving the track-loader over the returned cover material. These compaction actions will return the soil permeability to a state that is equal to or less than that which previously existed."

Commenting Organization: Ohio EPA Commentor: OFFO  
Section #: 3.1.2.5 Page #: 3-3 Line #: Code: C  
Original Comment #: 16

Comment: Please describe in further detail the decon methods that will be implemented at the FEMP decon facility for DEEP equipment.

Response: Agree.

Action: Page 3-3, Section 3.1.2.5. The following text has been added to the end of the section: "The FEMP will utilize a high-pressure steam and detergent mixture illustrated in FEMP SOP 55-C-101, 'Operation of Steam Detergent Cleaner in the Decontamination and Decommissioning Building.' Subsequent to decontamination, the salvageable equipment will be radiologically surveyed and authorized for free release off site." The SOP55-C-101 has been added to the DEEP Preference list.

Commenting Organization: Ohio EPA Commentor: OFFO  
Section #: 3.1.4.2 Page #: 3-6 Line #: Code: C  
Original Comment #: 17

Comment: Please include a schedule for the implementation of the Waste Pit #6 Drying Study.

Response: Agree.

Action: Page 3-6, Section 3.1.4.2. The following sentence has been added to the end of the section: "Drying is scheduled to begin April 1996 and completed November 1996."

Commenting Organization: Ohio EPA Commentor: OFFO  
Section #: 3.2 Page #: 3-8 Line #: Code: C  
Original Comment #: 18

**Comment:** The Ohio EPA recommends not pumping water into the waste pits for waste reslurry. This process would create a pressure head within the waste pit. Due to the lack of knowledge regarding liner integrity, this procedure could cause contaminant migration. Also, the presence of heterogeneous contents within the waste pits decreases the likelihood of success of a slurry pump working on a large scale. DOE should re-evaluate the appropriateness of using a slurry pump in the DEEP treatability study.

**Response:** Comment Acknowledged. More detail about the reslurrying test -- specifically, justification for the test and more information about the amount of water to be added during reslurrying -- should be provided. Reslurrying is not expected to result in contaminant migration, because water will only be added if insufficient run-in occurs; also, such water will be slurried immediately. Waste pit heterogeneity is not expected to be a factor, since heavy and large debris would be picked up by a backhoe or clam shell.

**Action:** **Page 3-9, Section 3.2.1.** The following text has been added after the second sentence: "Reslurrying was selected as a test because of the fine-grained nature of much of the waste in the waste pits and because of the potential for difficulty in dewatering the wastes. Most of the waste is fine material, perfect for reslurrying. (Heavy and large debris would be picked up by a backhoe or clam shell.) Previous studies of pit waste have shown that significant amounts of amorphous materials exist within the waste pits and that these amorphous materials may behave more like a liquid after water has been introduced. Thus, pit amorphous materials removal may be more efficiently performed by reslurrying. Additionally, it is likely that the presence of significant quantities of amorphous materials may hinder the effectiveness of conventional well dewatering."

**Page 3-10, Section 3.2.2.** The following paragraph was added after the first paragraph in this section: "The water to be used during reslurrying will be derived from existing water in the waste pits, which are located within the perched water table. Water run-in should be adequate to reslurry. Water would be added to the excavation only if insufficient run-in occurs; this water would be slurried immediately and there would be no standing water. When this occurs, only enough water would be added to support the reslurry and would be negligible relative to the amount of water already contained in the waste pits. The negligible amount of water to be added during reslurrying will be offset by the treatability information gained by performing an experiment to determine the viability of the technique. Decant water from the slurry settling tank is pumped to a temporary holding tank, then ultimately treated through the FEMP water treatment system. Solids resulting from decant operations are to be directed back into the respective waste pit of origin."

Commenting Organization: Ohio EPA Commentor: OFFO  
Section #: 4.5.1 Page #: 4-16 Line #: Code: E  
Original Comment #: 19

Comment: Located after the first sentence in this section is a repeated incomplete sentence which needs to be deleted. Please revise the text accordingly.

Response: Agree.

Action: Page 4-16, Section 4.5.1. The second "is estimated to be approximately 105, 000 gallons of water per day, to be pumped during the initial three to four days," has been deleted.

Commenting Organization: Ohio EPA Commentor: OFFO  
Section #: General Comment Page #: Line #: Code: C  
Original Comment #: 20

Comment: The document would be more user friendly if figures and tables were included within the text following its initial text reference in the appropriate sections. Please revise accordingly.

Response: Agree. Future documents of this type will be completed in accordance with the comment.

Action: None.

Commenting Organization: Ohio EPA Commentor: OFFO  
Section #: General Comment Page #: Line #: Code: C  
Original Comment #: 21

Comment: Document review would be made easier if DOE would use pages with numbered lines.

Response: Agree. Future documents of this type will be provided using pages with numbered lines.

Action: None.