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DOE-0402-98

Mr. James A. Saric, Remedial Project Manager
U.S. Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

SUBMITTAL OF DRAFT RESPONSES TO COMMENTS FROM THE U.S. ENVIRONMENTAL PROTECTION AGENCY AND OHIO ENVIRONMENTAL PROTECTION AGENCY ON THE DRAFT SITEWIDE EXCAVATION PLAN

The purpose of this letter is to transmit, for your review and approval, draft responses to the comments received from the U.S. Environmental Protection Agency (U. S. EPA) and the Ohio Environmental Protection Agency (OEPA) on the Sitewide Excavation Plan (SEP). For the major issues, such as selection of ecological contaminants of concern, certification unit design, hot spot criteria, hazardous waste management unit closure, and perched groundwater management during excavations, these draft responses reflect the strategies that Fernald Environmental Management Project (FEMP) representatives presented to the U. S. EPA and OEPA at various comment resolution meetings in December 1997 and January 1998.

The development of these draft responses to the U.S. EPA and OEPA comments on the SEP represents a significant milestone and hurdle to the Soils Project at the FEMP. The DOE appreciates the support that the U.S. EPA and OEPA contributed to this effort through the numerous meetings and teleconferences to help resolve all the outstanding issues. As previously discussed, after the U.S. EPA and OEPA approval of these responses the FEMP will initiate efforts to revise the draft SEP.

The FEMP looks forward to the ultimate approval of the SEP and its implementation in the excavation of the Operable Unit 2 (OU2) Southern Waste Units, scheduled to begin in June 1998.

If you or your staff should have any questions or concerns with the enclosed comment responses, or the DOE's strategy to revise the SEP, please contact Robert Janke at (513) 648-3124.

Sincerely,

Johnny Reising

FEMP:R.J. Janke

Johnny W. Reising
Fernald Remedial Action
Project Manager

Enclosure: As Stated

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RESPONSES TO U.S. EPA COMMENTS ON THE JULY 1997 DRAFT OF THE "SITEWIDE EXCAVATION PLAN"

GENERAL COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: General Page #: Not Applicable (NA) Line #: NA
Original General Comment #: 1

Comment: The "Sitewide Excavation Plan" (SEP) does not sufficiently address critical issues such as use of real-time monitoring techniques as a substitute for physical sampling and laboratory analyses for certification purposes, screening for "hot spots," establishing proper configurations of certification units (CU), and managing perched groundwater. These issues are further discussed in the comments below. The U.S. Department of Energy (DOE) should revise the SEP to reflect currently accepted practices or should provide sufficient justification to convince the regulatory agencies to accept the modified procedures.

Response: DOE, U.S. EPA and OEPA have met several times to discuss these issues (twice in December 1997 and once in January 1998). Consensus on the path forward for most of these issues have been achieved. DOE and U.S. EPA will continue to meet on the real-time procedures. Additionally, where these issues overlap with the WAC Attainment Plan, the path forward will coincide with changes made to the WAC Attainment Plan.

Action: The path forward on real-time monitoring techniques and hot-spot issues is discussed under U.S. EPA General Comments 2 and 4 and U.S. EPA Specific Comments 18, 19, 22, 40, and 46. The delineation and size of CUs is discussed under U.S. EPA Specific Comment 13. Information on the management of perched water is presented under U.S. EPA General Comment 8 and Specific Comment 25.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: General Page #: NA Line #: NA
Original General Comment #: 2

Comment: Many sections of the SEP, including Sections 2.2.3, 3.3.3.1, 3.3.3.3, 3.4.4, and 4.1.3, as well as Appendixes G and H state that the hot spot criterion is three times the final remediation level (FRL). However, the recently submitted Area 1, Phase I certification report identifies a criterion of two times the FRL. The SEP should be revised to consistently present the accepted hot spot criterion.

Response: The SEP will be revised to reflect the path forward on hot spot criteria negotiated between DOE, U.S. EPA, and OEPA, as noted below.

Action: Text along the following lines will be added to the SEP (recognizing details with the real-time instrumentation are being developed through the "Users Guidelines to Measuring Strategies and Operational Functions for the Deployment of In Situ Gamma Spectrometry at the Fernald Site" (DOE 20701-RP-0006, Revision A, 1998) or simply the User's Manual):

During precertification activities, the RTRAK and/or RSS systems will be used to provide a surface scan of the area being prepared for certification. Based on the

capability of the RTRAK/RSS instrument within the confines of the physical excavation, hot spots will be identified at 3 times the established FRL (i.e., 3 x FRL) for total uranium, thorium-232, and radium-226 or at the lowest detection limit of the system if the system cannot meet the 3 x FRL limit. All local areas with concentrations of any of these primary radiological COCs exceeding 3 x FRL will be delineated for further excavation before final certification can be initiated. Details on the use of the RTRAK and RSS during the precertification process will be provided in "Users Guidelines to Measuring Strategies and Operational Functions for the Deployment of In Situ Gamma Spectrometry at the Fernald Site" (DOE 20701-RP-0006, Revision A, 1998). The RSS system is under development to ensure comparability with the RTRAK system. The initial version of the user's manual, due to EPA by March 31, 1998, will not make use of the RSS system; the RSS system will be incorporated into the user's manual through a subsequent revision.

The primary goal of the final certification is to demonstrate that the FRLs of all the area-specific COCs (ASCOCs) have been met. This will be demonstrated by collecting physical samples and performing a statistical analysis on the analytical results (Appendix G). During certification, the remediation area will be subdivided into relatively homogenous Certification Units (CUs). To assure that residual contamination within a CU is reasonably homogenous, CU boundaries in a remediated area will be delineated by considering the pattern of total radioactivity identified during the final precertification scan. The initial CU delineation and precertification data will be presented in the Certification Design Letter for regulatory review and approval.

Physical samples will be collected and analyzed for ASCOCs within each CU during the certification process. A statistical evaluation of the analytical results will be conducted to evaluate if the COC-specific UCLs of the means are below the FRLs. Based on the statistical results and decision rules presented in Section 3.4 and Figure 3-8 of the SEP, each CU is evaluated for the appropriate action (e.g, further sampling, excavation, or proceed to certification).

After the statistical requirement noted above is met for the CU, each individual data point used in the final statistical analysis will be evaluated against the 2 x FRL as it pertains to primary radiological COCs. In general, the hot-spot criteria will consider both the magnitude of the concentration and the size of the potential local area with elevated residual concentrations. However, according to DOE guidance (DOE Order 5400.5 Chapter IV(4)(a)(1)), no residual concentration above 30 x FRL is allowed regardless of the size. Therefore, in the unlikely event that a discrete sample location has a COC-specific concentration that exceeds 30 x FRL, the location will be further excavated and resampled.

The trigger level for hot-spot investigations based on analytical results from physical samples will be set at 2 x FRL. When an analytical result of any primary radiological COC exceeds 2 x FRL, HPGe will be used to measure the size of the potential hot spot around the sample location. The limit of the acceptable area average concentration for primary radiological COCs is dependent on areal extent of the hot spot: when smaller than 10 square meters, 3 x FRL; between 10 and 25 square meters, 2 x FRL. Any area larger than 25 square meters and with a confirmed primary radiological COC areal average concentration above 2 x FRL is unacceptable. Details on the procedure for

hot-spot delineation will be documented in "Users Guidelines to Measuring Strategies and Operational Functions for the Deployment of In Situ Gamma Spectrometry at the Fernald Site" (DOE 20701-RP-0006, Revision A, 1998).

A remediation area is certified when all the CUs within the area have been demonstrated to comply with the statistical certification criteria for all ASCOCs as well as the hot-spot criteria for primary radiological COCs. Because concentrations of the primary radiological COCs can be measured using real-time instruments such as RTRAK, RSS, and HPGe, the size and size-dependent acceptable concentration limit of a hot spot can be readily estimated. Since the soil excavation will be driven by primary radiological COCs, it is not expected that other COCs will have any significantly elevated local residual contamination after all the ASCOC statistical criteria and the hot-spot criteria for primary COCs are satisfied. Therefore, no hot-spot criteria are proposed for secondary COCs at this time.

All confirmed hot spots will be excavated and rescanned using first RTRAK/RSS and followed by HPGe, if needed, until the residual concentrations of primary COCs are shown to be below the size-dependent acceptable limits of 2 x FRL or 3 x FRL. After removal of an identified hot spot, a final physical sample will be collected within the hot-spot foot print to confirm and complete the statistical analysis. All hot-spot investigations and excavations carried out during certification will be documented in the Certification Report for regulatory review.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 3

Comment: The SEP does not clearly present the rationale for determining whether soil will be routinely screened for Resource Conservation Recovery Act (RCRA) characteristics. The text indicates that these characteristics will be tested for only in areas already suspected to contain characteristic waste and in hazardous waste management units (HWMUs). Based on the possible complexity of waste characteristics in the production area and near former waste management units, and given the difficulty of predicting subsurface conditions because of the waste material's heterogeneity, excavated waste should be routinely screened for hazardous characteristics and relevant hazardous constituents.

Response: Per previous DOE and U.S. EPA understanding, and as stated in the OU5 ROD (Section 9.1.1, p. 9-6) and OU2 ROD (Sections 9.1 at p. 9-2 and 7.4 at p. 7-5), soil and associated debris from implementation of the selected OU2 and OU5 remedies for on-site disposal will only be evaluated for potential RCRA toxicity characteristics in the seven predetermined 'RCRA areas' presented in Table 2-3 of the SEP (first six from OU5 and the last one from OU2). RCRA screening will also be conducted on existing stockpiles where sources of the material are unknown (see Responses to U.S. EPA Specific Comment 28 and OEPA Specific Comment 56). All materials offered for transport to off-site treatment/disposal will need to be evaluated for off-site receiving facility waste acceptance criteria, including appropriate RCRA characterization and LDR determinations, documentation, manifesting, and record keeping. The text of the SEP will be revised for clarity on this issue at the appropriate locations. The current nomenclature — RCRA areas, RCRA locations, RCRA excavation units, potential

characteristic waste areas, etc. — appears to contribute to significant confusion regarding this issue, as well as to additional confusion regarding these seven 'areas/locations/units' and the hazardous waste management units (HWMUs) [e.g., U.S. EPA General Comment 5, U.S. EPA Specific Comments 17, 26, 28 and 29, and OEPA General Comment 7] . Therefore, DOE is evaluating whether to change that nomenclature to minimize potential confusions. Any such change would be incorporated into the revised SEP submittal.

Action: Revise as per the response. Also see the responses and actions of the referenced comments.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 4

Comment: The SEP presents a conceptual approach for conducting pre-excavation and certification sampling based on a combination of real-time techniques and physical sampling. The approach relies heavily on using real-time measurements to guide excavation and ensure that waste acceptance criteria (WAC) for the on-site disposal facility (OSDF) are met. However, the ability of the proposed real-time techniques to accurately measure contaminant levels has not been proven. The conceptual approach should be flexible enough to allow for use of real-time techniques yet defensible based on use of sufficient laboratory analytical data.

In addition, real-time measurements are proposed primarily to measure uranium levels on the base of an excavation. These measurements would be used to define a footprint on the ground surface that would then guide subsequent excavation. A number of limitations appear to be associated with this approach, including the following: (1) limited accessibility of equipment to the base of a given excavation because of physical constraints; (2) interference from contamination on sidewalls, in perched water, or on debris; (3) heterogeneous distribution of contamination in samples; and (4) limitations of equipment in defining lateral or vertical contamination on sidewalls or below the level that the equipment can penetrate within the base of a given excavation. Because of these potential limitations, DOE should consider using other measures, such as further verification sampling of sidewalls, excavation bases, and the soils beneath any proposed terminus of an excavation, before excavation activities are stopped in a given area.

Response: U.S. EPA, Ohio EPA, and DOE have agreed on the path forward for obtaining regulatory approval on the use of real-time instruments in making excavation and certification decisions. DOE is committed to using real-time instruments as cost-effective tools during the soil remediation process. Use of real-time instruments in demonstrating WAC attainment and precertification process is discussed below. Sampling of the excavation sidewalls is addressed under U.S. EPA General Comment 6. The use of the HPGe system to aid in the certification process for the primary radionuclides of uranium, thorium, and radium will be evaluated by EPA and DOE through the development and implementation of the QA/QC program for real-time instruments.

The SEP will be revised to describe the role that real-time radiological instrumentation will play in enabling the preferential identification and removal of contaminated soils and soil-like materials which exceed the waste acceptance criteria for total uranium and/or hot spot criteria for primary radiological COCs during precertification and certification processes. Presently, the HPGe Comparability Study Report and RTRAK Applicability Study Report described the two real-time systems currently in use. These reports described, in detail, the instrument detector systems, identified key data quality parameters, evaluated the usefulness and quality of data that each instrument produces, but lacked the details concerning implementation and limitations associated with each instrument. DOE recognizes that for the RTRAK and HPGe systems to be used routinely to support soil remediation (WAC attainment), additional detail is required as to how the systems will be implemented, their limitations, as well as the implementing procedures. DOE believes that the full discussion of the objectives, limitations, and procedures of the real-time instrumentation is broader than SEP and WAC Attainment Plan and, therefore, is best served through an appendix to the SCQ. The paragraphs below provide some discussion (for information purposes) of the objectives, procedures, and limitations of the real-time instrumentation, and the highlights of further development activities.

Objectives:

One of the primary objectives for using real-time radiological characterization equipment is to assist in the identification of soil and materials which contain uranium at concentrations above-WAC limits (1030 ppm). Real-time radiological measurements will be utilized in the initial pre-design phase of excavation planning to help identify (1) previously unknown above-WAC hot spots and (2) the areal extent of above-WAC contaminant concentrations which had been identified during the RI process. Ultimately, real-time instrumentation is hoped to be used during the pre-design phase to help determine the depth of above-WAC contamination. Although additional comparability studies are needed, it is hoped that through the use of a Geoprobe, when continuous (up to 4 ft. although typically 36 to 42 inch) 1.5 inch diameter soil core samples are collected in areas suspected of containing above-WAC concentrations at depth, such as around building foundations or within the Southern Waste Units, real-time radiological instrumentation can be used to discriminate the appropriate sections of the continuous soil cores collected by the Geoprobe for laboratory gamma spectrometry analysis. Real-time instrumentation will also be used during excavation activities to both help delineate the limits of RI-identified above-WAC areas and to identify otherwise unanticipated above-WAC areas which are encountered during the course of the excavation. Additional details will be provided in the "Users Guidelines to Measuring Strategies and Operational Functions for the Deployment of In Situ Gamma Spectrometry at the Fernald Site" (DOE 20701-RP-0006, Revision A, 1998).

Procedures:

DOE recognizes that along with the development of procedures there must also be a Quality Assurance Program established to ensure that procedures are developed and implemented properly. A Quality Assurance and Quality Control (QA/QC) program that contains or addresses a number of minimum requirements will be implemented.

The elements of the QA/QC program, as identified below, are scheduled to be in-place by March 27, 1998.

1. Quality Assurance (RTRAK and HPGe): The FEMP is currently developing a QA Program Plan for in-situ gamma spectrometry in accordance with RM-0012, which details the FEMP's quality assurance program (as directed by the SCQ).

2. Quality Control Plan: The FEMP is currently developing a QC Plan or procedure which will address the implementation QC elements that were detailed in Section 5.0 of the HPGe Comparability Study (July, 1997).

3. QC Procedure for Control Charts: The FEMP is currently developing a procedure which will address the generation, use, and maintenance of control charts for HPGe in-situ gamma spectrometry.

4. Quality Control Standards Measurement Data Base: The FEMP has established a data base to record and track measurement data collected from the Field Control Station and detector calibrations for both RTRAK and HPGe.

5. Preventative Maintenance Procedure: The FEMP is developing a preventative maintenance procedure for HPGe and RTRAK in-situ gamma spectrometry systems.

6. Develop and issue the following procedures: "Operation of the Radiation Scanning System," EQT-34 and "Operation of the Global Positioning System," EQT-GP.

7. Training: Develop, perform, and document the following training for all individuals needed to perform in-situ gamma spectrometry:

   - Training on the objectives and limitations, as detailed in the "Users Guidelines to Measuring Strategies and Operational Functions for the Deployment of In Situ Gamma Spectrometry at the Fernald Site" (DOE 20701-RP-0006, Revision A, 1998).

   - Training on QA/QC plans and procedures and training on all operating procedures for in-situ gamma spectrometry.

   - Training on the use and maintenance of gamma spectroscopy software.

Limitations:

The "Users Guidelines to Measuring Strategies and Operational Functions for the Deployment of In Situ Gamma Spectrometry at the Fernald Site" (DOE 20701-RP-0006, Revision A, 1998) will be a stand-alone document detailing not only the specific objectives and procedures, but also the limitations associated with the application of real-time technologies to the identification and removal of above-WAC soils. Further, DOE recognizes the need to obtain EPA approval of this document prior to the start of excavation in the South Field (currently scheduled for Spring, 1998). Therefore, a draft copy of the user's manual will be submitted to EPA and

Ohio EPA by March 31, 1998. Additional details concerning the implementation of real-time procedures, such as providing the area-specific strategy for the integration of the real-time technologies with the excavation plans and specifications, will be handled in individual IRDPs.

The principal limitation associated with using the real-time radiological instrumentation is the viewing depth in soils. HPGe and NaI detectors can provide accurate measurements to a depth of approximately, on average, 10 centimeters (4 inches) in soil. The scanning depth of either detector in soil varies with the horizontal distance from the detector, with the deepest view being from directly under the detector.

Action: First, DOE is committed to developing the "Users Guidelines to Measuring Strategies and Operational Functions for the Deployment of In Situ Gamma Spectrometry at the Fernald Site" (DOE 20701-RP-0006, Revision A, 1998) and obtaining EPA's approval on this report prior to the start of the Southern Waste Units excavation process, as has been discussed in recent meetings. Second, DOE is committed to setting up the QA/QC Program for the real-time instrumentation processes and further recognizes that this program must be in-place prior to the start of the Southern Waste Units remediation. As indicated in the response, DOE proposes to incorporate the real-time instrumentation procedures and processes into the SCQ as an appendix (discussions at a recent (January 1998) Real-Time Working Group Meeting centered on an appendix versus an addendum to the SCQ). Therefore, DOE proposes to provide only a summary level discussion of how the real-time instrumentation will be used to achieve WAC compliance in the response to SEP comments. Details on the use of the real-time instruments will be provided in the user's manual.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 5

Comment: The SEP proposes to identify RCRA-listed wastes using the toxicity characteristic leaching procedure (TCLP) only. Several site areas have handled RCRA-listed wastes. Using the TCLP to identify the extent of listed wastes in such areas is not appropriate because these wastes are listed due to the presence of hazardous constituents identified in Appendix VII to Title 40 *Code of Federal Regulations* (40 CFR) 261. An alternate analytical approach based on the hazardous constituents of the listed wastes should be proposed for areas potentially containing listed wastes.

Response: DOE will clarify the language which leads to this confusion (see the responses to U.S. EPA General Comment 3 and U.S. EPA Specific Comment 17, and OEPA General Comment 7).

Action: See the actions to the referenced comments.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 6

Comment: No sampling is proposed for sidewalls of excavations. This approach may be acceptable for areas where it is likely that the sidewalls will subsequently be removed. However, to control future excavations in a given area and to identify the lateral extent of contamination, sampling of sidewalls is recommended. In particular, sidewall sampling should be conducted at the likely perimeter of an excavation area. In addition, where subsurface waste variation is likely (such as in the former production area and near subsurface waste units), sidewalls should be sampled to ensure that the materials do not exceed RCRA criteria or WAC.

Response: In most cases, sidewalls will not exist when excavation is completed. A sloping surface will extend away from the deepest excavations and these sloped surfaces will be evaluated during the precertification and certification processes. Additionally, excavations of above-WAC soil and RCRA toxicity characteristic soil are bounded by predesign investigations which will conservatively establish the extent of toxicity characteristic soil and above-WAC material using analytical results from subsurface physical samples. Any special cases that may need scanning and/or sampling on the sidewalls during excavation will be identified in the IRDPs.

Action: None.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 7

Comment: According to the SEP, no procedures have been developed for establishing physical, vertical controls for excavation areas. As an example, deep excavations are proposed in the former production area. The extent of a working area will have to be limited at any given time. Based on the current approach, two contiguous excavation areas would have no physical barrier (such as sheet pilings) to identify the excavation limits. Without temporary or engineered barriers, it will be difficult to ensure that an area is fully excavated or that an area is not re-excavated as part of an adjoining area. The SEP should be modified to address this concern.

Response: The SEP does not present information on physical control of vertical excavation surfaces because vertical faces will not exceed 3 feet in height. In areas proposed for deep excavation, the margins of the excavation will be sloped or ramped to allow equipment access and safe working conditions. Also see the Response to U.S. EPA General Comment 8 on perched water.

Action: The SEP will be modified to note that if an excavation scenario warrants a vertical height of 4 feet or greater for the excavation face, sheet pilings and shoring will be used to stabilize the excavation area.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 8
Comment: According to the SEP, perched water will be managed as it is encountered, excavations will be routinely pumped, and the water will be discharged to the on-site wastewater treatment plant. The text provides some discussion of possible alternative water management procedures in the event that water contains waste constituents (for example, organic COCs) that cannot be treated by the plant. However, the SEP does not provide sufficient detail concerning perched water management and treatment compatibility determination. In addition, other concerns relating to perched water (for example, excavation stability) are not addressed. To avoid possible problems and delays during excavation, DOE should consider using more proactive means of managing perched water, such as dewatering certain areas before excavation and managing the water accordingly. In addition, DOE should provide more details on the proposed perched water management and analysis plan.

Response: See the Response to U.S. EPA Specific Comment 25.

Action: See the Action to the referenced comment.

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1 Page #: 1-17 Line #: 8
Original Specific Comment #: 1
Comment: The text refers to Figure 1-4 as showing areas of perched water. Figure 1-4, which does not show perched water, should be revised to do so, or the text should be corrected.

Response: Perched water zones will be shown on diagrams submitted with area-specific IRDPs.

Action: Remove text that references perched water zones on Figure 1-4.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1 Page #: Table 1-4 Line #: NA
Original Specific Comment #: 2
Comment: The table "Summary of Contaminant Levels Pertinent to Soil Remediation at the FEMP" should be revised to include concentration units for contaminants.

Response: The concentration units are indicated on the table. However, they are indicated in the shadowed row and are not clearly visible.

Action: Shadowing will be removed from the table to enhance the visibility of the unit designations.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.1.2.2 Page #: 2-5 Line #: General
Original Specific Comment #: 3
Comment: The text discusses the concentrations of various contaminants in various locations relative to their WAC. However, the text does not make clear that the results discussed are only the known concentrations of the contaminants. The number of samples analyzed for different contaminants varies widely, and the number of samples per unit area varies even more widely. Therefore, DOE's area-specific knowledge of the nature and extent of contamination may be incomplete. The activities proposed in the SEP may constitute the last chance to detect and remediate all contamination at the [Federal Emergency Management Plan sic]. The possible data gaps should be made explicit in Section 2.1.2.2, in Section 2.1.3.3, and everywhere else that existing data are used to identify area-specific contaminants of concern (COC) and to define necessary analyses.

Response: DOE notes that FEMP corresponds to the Fernald Environmental Management Project, and not the Federal Emergency Management Plan. DOE is aware of potential data gaps in some areas and has proposed in the SEP a predesign phase to allow the collection of additional data.

Action: Emphasis will be added to Sections 2.1.2.2. and 2.1.3.3 and other appropriate areas in the SEP to acknowledge that the predesign investigation will be used to acquire any additional data needed to excavate and remediate the area of interest.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.1.3 Page #: 2-9 Line #: 15
Original Specific Comment #: 4
Comment: The text states that the activity of thorium-232 will be used to determine attainment of the FRLs for thorium-228 and radium-228. The text cites a comparability study report as justification for the assumption of secular equilibrium. However, the cited report lacks an adequate justification, as noted in a previous U.S. Environmental Protection Agency (U.S. EPA) comment on that report. The SEP should be revised to discuss the current status of this issue.

Response: See the response to OEPA General Comment 2.

Action: See the action to OEPA General Comment 2.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.3.7 Page #: 2-23 Line #: 16-25
Original Specific Comment #: 5
Comment: The list of deliverables should include integrated remedial design packages (IRDP) and certification design letters as formal submittals.

Response: Agree.

Action: Integrated Remedial Design Packages and Certification Design Letters will be added to the list of reporting requirements.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.4.2.1 Page #: 2-28 Line #: 22
Original Specific Comment #: 6
Comment: The text states that the high-purity germanium detector (HPGe) can be used to certify FRL attainment. However, this assertion has not been accepted by the regulatory agencies. DOE should clarify that it plans to use the HPGe to certify FRL attainment in the future pending regulatory approval. Until that occurs, discrete sampling results will be required for certification. The SEP should be revised accordingly.

Response: DOE and U.S. EPA will continue to meet and exchange information on the development of HPGe for certification work. When data are sufficient to support the use of HPGe for certification decisions, DOE will obtain regulatory approval from U.S. EPA. Until that occurs, discrete sampling results will be used for certification.

Action: The SEP will be edited to note that HPGe will not be used for certification decisions until regulatory approval is obtained.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.5.8 Page #: 2-37 Line #: 19-25
Original Specific Comment #: 7
Comment: The list of "special materials" should include tanks and drums.

Response: Tanks and drums are included under non-pressurized containers as described in F.4.1.7.

Action: For clarity, text in line 19 of p. F-22 of F.4.1.7 will be revised to read "Containers include intact drums, metal and wood boxes, *tanks*, cans, and other types of *non-pressurized* containers." (*italics* used to emphasize revisions)

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.1.3 Page #: 3-8 Line #: 1-19
Original Specific Comment #: 8
Comment: The text describes a conceptual approach to establishing a predesign sampling strategy. The approach is unclear. Modeling would apparently be conducted for each proposed excavation area (or possibly each CU), and the modeled results would be used to identify the numbers and types of samples to be collected. However, no explicit description is provided of how, when, and where this approach would be applied. The text should be revised to present such a description.

Response: The conceptual approach presented in Section 3.1.3 is necessarily simple to allow general application to all remediation areas (homogenous versus heterogenous). Explicit information on the number and type of samples to be collected in each remediation area will be presented in the predesign investigation Project Specific Plans (PSPs). These PSPs will be submitted for regulatory agencies review. It is not the intent of the SEP to state explicit details, it merely provides a workable framework for personnel developing the PSPs and IRDPs.

Action: The SEP will state that predesign investigation PSPs will be developed and submitted for review.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.2 Page #: 3-9 Line #: 20
Original Specific Comment #: 9

Comment: The text states that each IRDP will include a remediation work plan detailing applicable waste disposition program procedures, excavation controls, interim and final grading plans, and the restoration design. However, an area-specific health and safety plan should also be included for each area. The health and safety plan should be specific to the estimated depth associated with the excavation and the COCs expected to be encountered during the excavation. The SEP should be revised to address this issue.

Response: Section 6.0 of the SEP addresses the approach to implementation of health and safety requirements at the project-specific level. The text of the subject subsection will be revised to reflect the inclusion of health and safety in the implementation plan of the IRDP.

Action: The text of the current lines 14-18 of p. 3-9 will be revised to read:

"Each IRDP will also include an area-specific implementation plan that incorporates area-specific elements of a remediation work plan, such as *area-specific constituents of concern, anticipated excavation depths,* excavation controls, coordination of soil excavation with D&D activities in the former production area, waste disposition, *environmental controls and monitoring (Section 5.0), health and safety (Section 6.0),* interim/final grading, and restoration design." (*italics* used to emphasize additions)

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.2 Page #: 3-9 Line #: 20
Original Specific Comment #: 10

Comment: The text states that "remediation wastewater will be sent to the on-site AWWT facility after potential pretreatment for organic contaminants." The text does not define remediation wastewater, and no specific method is described to determine the quality of the remediation wastewater. The text should define remediation wastewater and describe the methodology that will be used to determine its quality.

Response: Agree. Also see the Response to U.S. EPA Specific Comment 25 on perched water control.

Action: The existing "The need for wastewater...potential pretreatment for organic contaminants." text in lines 19 to 21 will be replaced with text similar to the following:

"The need for soil treatment (at either an on-site or off-site facility) and/or remediation-generated wastewater treatment will be specified. Remediation-generated wastewater is the stormwater, perched water and other waters (e.g., excavation and other heavy equipment wash down water) generated during the remediation process. Remediation-generated wastewater will be pre-treated for organic contaminants when necessary prior to placing the water in the appropriate main treatment loop (Phase I or Phase II) of the on-site AWWT facility. The need for pretreatment of remediation-generated wastewater, and the appropriate main treatment loop of the AWWT, will be evaluated during the design process using the AWWT's wastewater acceptance guidelines, and coordinated with the AWWT facility."

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.3.1.3 Page #: 3-13 Line #: 4
Original Specific Comment #: 11
Comment: The text states that no soil that exceeds the radionuclide WAC will go into the OSDF. However, the low-temperature thermal desorption treatment discussed on Line 17 of Page 3-13 drives off essentially all water and most organic matter. As a result, inorganic matter such as radionuclides is concentrated. Therefore, post-treatment soil may exceed the WAC even though the soil did not do so before treatment. The SEP should be revised to include a provision for retesting soil after treatment whenever the result of an original analysis exceeds half the WAC and the treatment would tend to concentrate the contamination.

Response: Low-temperature thermal desorption will not produce results significantly different than reported results for soil samples, as the standard protocol for analysis of soil samples requires that interstitial water be driven off prior to digestion of the solids. That is, analytical results for soil samples are currently reported on a dry basis. Significantly higher temperatures used for soil incineration would produce dehydration of clay mineral structures and total loss of organic material (e.g., humic materials). However, soil incineration is not a proposed treatment.

Action: None.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.3.2.1 Page #: 3-15 Line #: 13
Original Specific Comment #: 12
Comment: The text states that Table 2-4 includes physical, chemical, and radiological WAC for the OSDF. However, this table includes only chemical and radiological WAC. The table should be revised to include the physical WAC, such as the size and shape limits for material to be disposed of.

Response: Table 2-5 presents the physical criteria of the OSDF WAC.

Action: Revise the text to reference Table 2-5 for the physical criteria of the OSDF WAC.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.3.3.2 Page #: 3-18 Line #: 5
Original Specific Comment #: 13
Comment: The text states that the nominal size of Group I CUs is 250 by 250 feet (ft) (up to 62,500 ft^2) and that the nominal size of Group II CUs is 500 by 500 ft (up to 250,000 ft^2). However, Section 2.2 and Table 2-3 of the Area 1, Phase I certification report define Group I CUs as having a size of 200 by 200 ft up to 1 acre (43,560 ft^2) and Group II CUs as having a size of 400 by 400 ft up to 4 acres (174,240 ft^2). The report also discusses a Group III CU up to 16 acres in size for use in the fringe areas of the site. The discussion of CUs in the SEP should be made consistent with established practice. Section 3.3.3.2 should therefore be revised, as should Sections 3.4 and 4.1 through 4.6.

Response: DOE, U.S. EPA, and OEPA have met several times on this issue and the path forward is based on the CU size being a multiple of the 125' by 125' grid size used in all the FS

residual risk assessment modeling. Two general upper bounds of CU sizes were selected to simplify the certification procedure: 250' by 250' (Group 1) and 500' by 500' (Group 2). The 16-acre Group 3 CU cited in the Area 1 Phase 1 certification report has been abandoned. Additional factors for consideration during CU delineation were also established.

Action: The CU discussion in the SEP will be revised to reflect the following text:

In general, the CU boundary in a remediated area will be delineated considering both the pre- and post-remediation conditions (i.e., physical and chemical conditions). To ensure that residual contamination within a CU is reasonably homogenous, the CU boundaries will be delineated using the pattern of total radioactivity that is generated during the precertification scan. Within each CU, the range of residual total radioactivity will generally be within one order of magnitude. To the extent practical, a CU will cover an area with similar physical and chemical conditions to ensure valid statistical assumptions apply to the sampling and data reduction calculations used to make the certification decision. The CU delineations will also need to consider efficient access control and prevention of cross- and re-contamination during the certification process. Also, the number of CUs and physical samples must be manageable in order to facilitate an efficient remediation and certification process. The initial CU delineation, sampling locations, and rationale (e.g., RI/FS and precertification data) will be presented in an area-specific Certification Design Letter for regulatory review and approval before certification sampling is initiated.

Group 1 CUs will be defined in areas that, generally, have COC concentrations above their respective FRL before remediation, with the nominal CU size up to 250' by 250'. Local area-specific conditions and COC distributions will determine the individual Group 1 CU size. Factors to be considered for reducing the Group 1 CU size from the nominal 250' by 250' dimension include: previous hot-spot and above-WAC boundaries, HWMU boundaries, boundaries of areas containing toxicity characteristic soil, storage pile foot prints, previous building foundations, drainage features (e.g., ditch or basin), road ways, former production area fence line, property lines, and previous major site pipe lines.

Group 2 CUs will be defined in areas that, generally, have COC concentrations below their respective FRL prior to remediation, with the nominal size up to 500' by 500'. Factors to be considered for reducing the Group 2 CU size from the nominal 500' by 500' dimension include: storage pile foot prints, drainage features (e.g., ditch or basin), road ways, property lines, farm land boundaries, and previous major site pipe lines.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.3.3.3 Page #: 3-19 Line #: 4
Original Specific Comment #: 14
Comment: The text states that if non-radiological COCs are driving the excavation in a CU, the decision may be made to collect discrete samples for laboratory analysis for metal or organic COCs. The estimated extent of the CU excavation will be determined by the predesign investigation. However, field screening techniques should be used to

determine the extent of organic COCs in each CU. Therefore, a specific method for field screening for organic COCs should be included in the SEP.

Response: Field screening methods for organic COCs are given in Appendix H, Table H-3

Action: Appendix H and Table H-3 will be referenced in Section 3.3.3.3

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.3.4.1 Page #: 3-20 Line #: 2
Original Specific Comment #: 15

Comment: The text defines WAC attainment for soil. As written, the text could refer to the average concentration of a given contaminant in soil. The text should be revised to define attainment as demonstrating that no portion of the soil intended for the OSDF exceeds the WAC.

Response: Please refer to the response to OEPA Comment 13 on the WAC Attainment Plan. DOE agrees that the text as written is confusing and will be revised. However, DOE disagrees with EPA's view that no portion of the soil intended for the OSDF can exceed the WAC. All laboratory measurements estimate the average concentration of a COC in the volume of material that comprises the sample used to generate the laboratory split required for analysis. Therefore, results from measurements pertaining to WAC attainment are dependent on the volume analyzed. In the case of a 100 gram soil split obtained from a 1 kilogram sample, an analysis that reports 20 milligrams of uranium per kilogram of soil reflects an average concentration of uranium for the 1 kilogram sample represented by the 100 gram split. It can never be demonstrated that all soil placed in the OSDF meets the WAC (Zircon grains may contain several thousand parts per million of uranium).

DOE agrees that the implementation of a WAC attainment strategy for soil can be based on an approach which defines the WAC contaminant criteria as "not to exceed values" provided the approach is implementable and well-understood by all stakeholders. To achieve this WAC attainment strategy, DOE is relying on a combination of real-time measurements and physical samples to maximize the probability that soil placed in the OSDF meets the WAC.

Action: Sections of the WAC Attainment Plan regarding the definition and requirements of WAC attainment will be directly referenced in the SEP. The technical basis of the WAC attainment strategy will be outlined in the real-time user's manual. The SEP will also be revised to reference the implementation approach outlined in the real-time instrumentation User's Manual. Please refer to response to OEPA comment 13 on the WAC Attainment Plan. Also see the responses to U. S. EPA General Comment 4 and OEPA Specific Comment 18.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.3.4.1 Page #: 3-20 Line #: NA
Original Specific Comment #: 16
Comment: The text describes sampling to define the perimeter of an excavation based on WAC attainment. The text should explain how attainment will be defined for sidewalls of excavations. This comment also applies to characterizing HWMUs and the extent of RCRA wastes where soils may exhibit RCRA-characteristic hazardous concentrations. The SEP should be revised to address this issue.

Response: See the response to U.S. EPA General Comment 6.

Action: See the action to U.S. EPA General Comment 6.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.3.4.4 Page #: 3-22 Line #: 19-27
Original Specific Comment #: 17
Comment: The text indicates that RCRA-listed waste will be evaluated using RCRA characteristic testing. This apparent confusion of characteristic constituents and hazardous constituents should be reconciled. In addition, the text appears to indicate that HWMUs will be closed based on data for four samples regardless of HWMU size or waste type. Application of this approach to all HWMUs should be clarified and justified in the SEP.

Response: DOE will clarify the language which leads to this confusion (see the Responses to U.S. EPA General Comments 5 and 3). The approach to HWMU closure requirements has been worked out with DOE, U.S. EPA, and OEPA, and is presented in the responses to OEPA General Comment 1 and Ohio EPA Specific Comment 42.

Action: See the Actions to the referenced comments.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.4 Page #: 3-23 Line #: 21
Original Specific Comment #: 18
Comment: The text implies that the HPGe will be primarily used to certify that uranium and thorium concentrations are less than their FRLs. The comparability report on HPGe results and laboratory data has not been accepted at this time, so the HPGe may not be adequate for certification purposes. The SEP should be revised to address this issue.

Response: Agree.

Action: The SEP will be revised per the action under Specific Comment 6.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.4.2.2 Page #: 3-25 Line #: General
Original Specific Comment #: 19
Comment: This section discusses taking real-time measurements with the HPGe. Until the HPGe is accepted by the regulatory agencies, an alternative method should be used for certification purposes. The SEP should be revised to address this issue.

Response: Agree.

Action: The SEP will be revised per the action under Specific Comment 6.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.4.2.3 Page #: 3-27 Line #: 6
Original Specific Comment #: 20
Comment: The text states that some of the samples collected will be selected for analysis. Unless this selection is random (as specified on lines 13 and 17), the analytical results will be unacceptable for certification purposes. The text should be revised to detail statistically valid sampling procedures.

Response: Details on the statistical analysis are presented in Appendix G.

Action: Line 6 will be changed as follows: "...samples will be *randomly* selected from the ..." (*italics* used to emphasize revision).

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.6 Page #: 3-34 Line #:
Original Specific Comment #: 21
Comment: Section 3.6 addresses record keeping for on-site activities at FEMP. However, off-site activities such as transport and disposal of impacted soil will occur during removal of the sewage treatment plant (STP), and these activities will subject the remediation effort to local permitting and manifesting requirements. The text should be revised to address specific manifesting and document control requirements for off-site transport and disposal activities.

Response: Regardless of whether the disposal is on site or off site, the principles for waste acceptance, data management and record keeping are highly similar if not identical. As implied by the comment, most of these differences are related to manifesting in strict accordance with the DOT requirements. Transport of materials to an off-site facility requires that the receiving facility's waste acceptance criteria be met, all needed documentation for acceptance of the waste, manifesting for DOT requirements, and record keeping. Those DOT requirements, and additional off-site disposal vs. on-site disposal differences, are already identified in Table A-2 of the SEP (mostly at pp. A-64 through A-66 in the Management of Hazardous Remediation Waste topical subdivision).

Action: Revise the text of Subsection 3.6, and its subsections, at appropriate locations to address the parallel, changed or additional requirements pertaining to management for off-site disposition.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.1.3 Page #: 4-7 Line #: 12-20
Original Specific Comment #: 22
Comment: The text indicates that a number of sampling techniques may be used to establish pre-excavation limits, and a number of real-time measurements are proposed along with possible use of discrete soil samples. U.S. EPA recognizes that the approach used should be flexible, but the text should provide ground rules for using in situ or discrete

soil samples to define an excavation footprint. For example, the text indicates that x-ray fluorescence (XRF), sodium iodide (NaI) detectors, photoionization detectors (PID), HPGe methods, or physical sampling with laboratory analysis may be used. However, the text does not indicate why one method may be more appropriate than another based on location, waste type, or field conditions. The basic analytical methods that will be used to establish the excavation footprint and the rationale for their use should be explicitly stated for each excavation area based on current data needs. The SEP should be revised to address this issue.

Response: Section 3.1 provides ground rules for using in situ methods and discrete soil samples in the definition of excavation foot prints during the predesign investigation. Text in the SEP will be clarified to note which methods are applicable to area-specific COCs.

The user's manual which is being developed for the real-time instruments (see response to U. S. EPA General Comment 4) will provide the details associated with applying NaI and HPGe detectors to the implementation of the various compliance drivers, excavation design, WAC attainment, precertification and hot spot identification, and certification.

Action: Section 4.0 will be edited to tie the COC lists in Table 2-9 with the specific analytical method.

Sodium-iodide and HPGe detectors will be used to characterize total uranium, thorium-232, and radium-226 (i.e., primary radionuclides) during the predesign and precertification investigations. If technetium-99 is a COC in the excavation area, physical samples will be collected and submitted for analysis of characteristic beta radiation to establish the extent of technetium-99 excavation. Physical samples will be collected during the certification process for laboratory gamma-spectrometry analysis of primary radionuclides and technetium-99, if applicable.

RCRA metals (except mercury) may be characterized by x-ray fluorescence during the predesign investigations if the instrument can produce sufficient sensitivity to provide a meaningful quantitative number relative to WAC and FRL limits. When this cannot be accomplished, physical samples will be collected and submitted for laboratory analysis of metals by standard laboratory protocols (e.g., SW846).

Total organic vapor screening will be conducted in all areas for health and safety purposes. If organic COCs are known or suspected to be present at the active excavation, photoionization detectors (PIDs) will also be used to scan soil cores and uncovered debris for elevated levels of volatile organic compounds. PIDs may be used to bias samples collected for laboratory analysis (i.e., GC/MS). In all cases, physical samples will be collected for laboratory analysis to establish the extent of excavation and final certification for organic COCs.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.2.2 Page #: 4-16 Line #: 20
Original Specific Comment #: 23

Comment: The text states that excavated material will be subjected to a layer-by-layer scan to determine whether it meets the WAC. The text should also state that the scan reading will include an allowance for shielding. That is, the text should state that the maximum acceptable instrument reading will be less than the WAC in order to ensure that shielded portions of the material (those within a layer) are also in compliance with the WAC. The size of the shielding allowance will depend on the thickness of the layers. The problem of tradeoffs between shielding allowance and layer thickness should be briefly discussed in Section 4.2.2 or 4.2.3.

Response: Once developed, the user's manual for the real-time instrumentation will provide trigger levels for the RTRAK and HPGe systems for use during excavation activities. In general, the gamma energies read by the NaI detector are attenuated at depths of 10 to 15 centimeters (cm) below the surface. Therefore, measurements reflect the activity of total uranium in approximately the upper 10 cm of soil.

Action: See the action to U.S. EPA General Comment 4.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.2.3 Page #: 4-17 Line #: General
Original Specific Comment #: 24

Comment: The text does not state that some of the areas covered by the SEP have the potential to emit radon in excess of the 20 picocuries per square meter per second limit identified in 40 CFR 61, Subpart Q. Section 4.2.3 and other sections discussing areas containing potential radon sources should address monitoring and control of radon emissions during the excavation process. The necessary monitoring and control procedures should be integrated into the various tasks of Section 4.2.3 instead of making them part of a new, separate task.

Response: As covered in previous discussions and correspondences on radon monitoring, the materials at the FEMP containing radium-226 in sufficient concentration to emit radon-222 in excess of 40 CFR 61 Subpart Q's 20 $pCi/m^2/sec$ standard prior to remedial action are contained in the OU4 silos (Silos Project) and the OU1 waste pits (Waste Pits Remedial Action Project). Responsibilities for those materials, including radon flux monitoring and/or radon emission controls, are in projects other than the Soil Characterization and Excavation Project (SCEP). Those materials will be removed and confirmed by the regulators (by the other projects) prior to SCEP conducting underlying soil remediation in the area. Therefore, there is no radon source [as defined in 40 CFR §61.191(b), also part of 40 CFR 61 Subpart Q] in the SCEP, and no need for either radon emission controls or radon flux monitoring at the time of SCEP excavation. In general, the IEMP will address all the required radon monitoring at the FEMP.

Action: None.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.2.3 Page #: 4-20 Line #: 27-30
Original Specific Comment #: 25

Comment: This section is headed "Task 12 - Implement Perched Water Control, as Needed". This heading is followed by a brief description of possible issues related to perched water. Perched water may raise significant issues related to both excavation stability and waste generation and treatment. Therefore, the text should more thoroughly discuss where perched water will be located, what types of contamination are expected to be present in perched water, and how perched water will be controlled and treated during excavation activities.

Response: DOE met with U.S. EPA and OEPA on January 13, 1998 and agreed to provide the following bullet list in the SEP for perched water control. Post-SEP presentation of the list may be abbreviated to reflect the specific needs of a given excavation area.

Action: Add following bullet list on perched water control actions:

- Investigate potential perched water yield, quality, and AWWT facility compatibility in the excavation area during the predesign investigation
- Schedule deep excavations in high-yield areas during dryer seasons (if possible)
- Collect perched water by using dewatering wells (i.e., pressure relief), interception trenches, and/or sumps within or around the excavated area to maintain the working area as dry as possible
- Delineate and sequence deep excavation zones to simplify potential dewatering needs and to prevent recontamination of an excavated area by inflow of perched water from adjacent unexcavated areas
- Consider potential impacts of perched water on excavation stability during the design process
- Provide adequate and cost-effective pumping capacity and temporary storage for collected perched water if pretreatment is required
- Prevent full penetration of the glacial till layer overlying the GMA to minimize the introduction of perched water into the GMA (Note: deep excavations that penetrate the unsaturated sand and gravel above the GMA will be lined with clay)
- Minimize mixing of perched water from different stratigraphic levels until sampling and analysis have determined the treatment option
- Arrange necessary water sampling and analytical services in selected HWMUs that contain organic COCs when the predesign investigation is inconclusive regarding treatment determination
- Coordinate treatment schedule and capacity requirements with the AWWT facility

- Provide efficient and cost-effective transport systems to send the collected water to designated treatment and/or discharge points (e.g., maximize the use of existing, over-land, mobile, and/or reusable piping/hoses, pumping, and/or trucking systems)

- Suspend excavation when the collection, storage, and/or treatment capacities are exceeded

- Provide engineering details of the perched water control system in the area-specific IRDPs

- Document the perched water volume and water quality information collected during excavation

- After receiving regulatory approval of the certification report, divert storm water via existing or new drainage channels to Paddys Run and stop the local perched water collection systems (Note: selected deep excavation areas will not be backfilled after certification and will be maintained as ponds that are fed by precipitation and perched water)

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.2.3 Page #: 4-22 Line #: 27-30
Original Specific Comment #: 26

Comment: The text implies that four random samples will be collected from a given HWMU footprint and analyzed for HWMU COCs and that the analytical data will be used to certify RCRA closure. This abbreviated approach does not appear to adequately reflect the complexity of RCRA closure activities. The application and limitations of this approach should be clearly described in the text.

Response: The text will be revised pursuant to the discussions with the U.S. EPA and Ohio EPA on this matter. See the Response to OEPA General Comment 7.

Action: See the action for the referenced comment.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.3.1 Page #: 4-25 Line #: 1-20
Original Specific Comment #: 27

Comment: The text describes the activities that will be undertaken to characterize the existing soil stockpiles before their excavation and disposal. It is not clear why 60 samples will be collected from the west stockpile and submitted for analysis while only the NaI analysis will be used to characterize other soil stockpiles. The rationale for this approach should be more clearly stated, or should be removed from the SEP and described in more detail in the IRDP.

Response: DOE met with U.S. EPA and OEPA on the stockpiles issues several times during December 1997 and January 1998, and has agreed on the technical approach for stockpile management as presented in the Response and Action to Ohio EPA Specific Comment 30.

Action: Current text in lines 2-5 of p. 4-25 on the specifics of the Area 1, Phase I stockpile sampling will be deleted. Text in preceding lines of the subject paragraph already presents sufficient cross-reference to the pre-excavation investigation, while text in subsequent lines already indicates that the appropriate information will be presented in the IRDP.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.3.3 Page #: 4-27 Line #: 28-30
Original Specific Comment #: 28
Comment: The text indicates that organic vapor monitoring will be used as a basis for identifying potential RCRA-characteristic waste. This approach appears to be inconsistent with the types of characteristic waste likely to be encountered during excavation. Further justification of this approach should be included in the text.

Response: Agree. Discussion will be clarified.

Action: Text in lines 28 - 30 will be changed as follows:

"Stockpiles that are not tied to a source and whose COCs are unknown will be monitored with a PID to scan for organic COCs and multiple phases of physical samples will be collected as dictated by the scanning and previous sampling effort. Based on the characterization results, the materials will be dispositioned accordingly."

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.4.3 Page #: 4-36 and 4-37 Line #: NA
Original Specific Comment #: 29
Comment: The text discusses the RCRA units in the former production area. However, the text is unclear as to why some units and not others are considered for excavation. The text should be revised to clarify this matter.

Response: All of the seven areas predesignated in the OU2 and OU5 RODs as having the potential to contain toxicity characteristic soil which would be amenable to preferential segregation and treatment (see Table 2-3) will be investigated to determine the extent of excavation required to remove the above-FRL toxicity characteristic soil. DOE believes that Responses and Actions to preceding comments (e.g., General Comment 3) will sufficiently alleviate the confusion.

Action: None.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.4.3 Page #: 4-38 Line #: 5-13
Original Specific Comment #: 30
Comment: The text indicates that soil sampling will be conducted prior to final demolition of structures. It is likely that soil conditions would change after the sampling was conducted because of the demolition activities. The rationale for conducting this sampling should be clearly stated.

Response: Above-grade D&D activities to be conducted by other FEMP projects will leave the at-grade slabs and underlying soils in place, but are likely to result in staging of resultant

debris on the slab. In order to have access to the slabs unimpeded by debris, when possible SCEP will conduct the indicated sampling prior to those above-grade D&D activities. The text will be revised to indicate this rationale.

Action: Insert the following text at the beginning of line 5: "Above-grade D&D activities to be conducted by other FEMP projects will leave the at-grade slabs and underlying soil in place, but are likely to result in staging of resultant debris on the slab. Therefore, in order to have access to the slabs unimpeded by debris to collect timely design information regarding conditions of the underlying soil, when possible..."

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 5.0 Page #: 5-1 Line #: General
Original Specific Comment #: 31

Comment: This section discusses environmental controls and monitoring. These controls and monitoring activities should be integrated into the various area-specific IRDPs, not segregated. Therefore, at a minimum, the various excavation approach-specific portions of Section 4.0 should mention the special conditions, such as fugitive dust and radon emissions, relevant to each affected area and should cite the related portion of Section 5.0 that includes further information on the corresponding controls and monitoring. The SEP should be revised accordingly.

Response: DOE will clarify that fugitive dust monitoring will take place in each of the proposed excavation approaches in Section 4.0. However, radon monitoring is not needed during SCEP remediations, for reasons discussed under Specific Comment 24. As indicated in Section 5.0, the implementation plan for each IRDP will address the environmental controls and monitoring for that soil remediation project. The environmental controls and monitoring for a soil remediation project are developed integrated with the project planning and design.

Action: The following text will be inserted on line 23, page 4-1 before the sentence which calls out Table 4-1:

"Environmental controls and monitoring for individual soil remediation projects are developed as an integral part of the planning and design of the project; details are presented in Section 5.0."

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 5.1.2.4 Page #: 5-11 Line #: General
Original Specific Comment #: 32

Comment: This section discusses radon emissions but considers only fence line monitoring. The text should be revised to address the source monitoring necessary to comply with 40 CFR 61, Subpart Q.

Response: See the response to U.S. EPA Specific Comment 24.

Action: None.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: C.2.3.3 Page #: C-14 Line #: 15
Original Specific Comment #: 33
Comment: The text states that Table C-17 presents the K_d values used in modeling contamination in surface water and sediment. However, this table is not included in the SEP submitted for review. Because these values have a large effect on the estimates of the effective dose to a receptor from a given concentration in the original contaminated soil, the table should be included in the SEP.

Response: Agree.

Action: Add Table C-17 in the revised document.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: C.3.1 Page #: C-15 Line #: 22
Original Specific Comment #: 34
Comment: The text cites Figures B-2 through B-4. The text should be revised to correctly cite Figures C-5, C-6, and C-8. In addition, the text should be revised to account for Figure C-7, which depicts molybdenum distribution and is not mentioned in Section C.3.1.

Response: Agree.

Action: Revise text on page C-15 accordingly. Based on comments from Ohio EPA, the content of Appendix C will be re-organized. Therefore, the above discussion will occur in a new section of the revised document.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: C.3.2.4.5 Page #: C-27 Line #: 18
Original Specific Comment #: 35
Comment: The text discusses lead contamination from the former trap range. Many birds are highly susceptible to lead toxicity from ingestion of particulate lead into their crops. The presumed form of lead contamination in the former trap range area is lead shot, so such ingestion is a serious concern. This information should be added to Section C.3.2.4.5 in order to support the recommendation in Section C.3.2.4.7 for thorough remediation of this area.

Response: Agree.

Action: Include a discussion on the ingestion of particulate lead in the revised SEP Appendix C. Based on comments from Ohio EPA, the content of Appendix C will be re-organized. Therefore, the above discussion will occur in a new section of the revised document.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: C.4 Page #: C-46 Line #: 10
Original Specific Comment #: 36
Comment: The text states that four constituents are likely to be present at remnant concentrations greater than their benchmark toxicity values (BTV). However, Sections C.3.1 (Line 20 on Page C-15) and C.5 (Line 2 on Page C-48) list only three such COCs. This discrepancy should be reconciled.

Response: Agree.

Action: Revise text throughout to include molybdenum with the other post-excavation metals (antimony, cadmium, and silver) that are a potential concern.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: Appendix C Addendum Page #: Table C.A-20 Line #: NA
Original Specific Comment #: 37
Comment: In this table and the following 12 tables (through Table C.A-32), the entries in the third column are "see note." However, no note is provided in any of the tables. The appropriate note should be included in each table.

Response: Agree.

Action: Add the appropriate note in the revised document.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: D.1 Page #: Table D-2 Line #: NA
Original Specific Comment #: 38
Comment: The table lists an FRL of 1 milligram per kilogram for calcium, iron, magnesium, potassium, and sodium. However, no FRLs have been established for these essential metals. The table should be revised to correct this error.

Response: Agree.

Action: FRL values will be removed for calcium, iron, magnesium, potassium, and sodium.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: D.1 Page #: Table D-3 Line #: NA
Original Specific Comment #: 39
Comment: The table lists the technetium-99 FRL as 29.1 picocuries per gram (pCi/g), but Table 2-7 lists this FRL as 30 pCi/g. This discrepancy should be reconciled.

Response: Agree.

Action: The FRL and WAC for technetium-99 will be cited as 29.1 pCi/g throughout the SEP.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: E.8.2.1 Page #: E-22 Line #: 9
Original Specific Comment #: 40
Comment: The text states that the radiation tracking system (RTRAK) can accurately scan contaminant concentrations of three times the FRL. The hot spot criterion used for Area 1, Phase I certification is only twice the FRL, and hot spot surveys are the primary intended use for the RTRAK. Therefore, DOE should improve the capabilities of the RTRAK so that it can detect contaminant concentrations of twice the FRL.

Response: See response to U.S. EPA General Comment 2.

Action: None.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: F.0 Page #: F-1 Line #: 9
Original Specific Comment #: 41
Comment: The text states that Section F.9 deals with surveillance and inspections. However, no Section F.9 appears in the SEP. DOE should either include Section F.9 to provide a summary of its intended surveillance and inspection activities (the preferred alternative) or delete the reference to Section F.9.

Response: Agree.

Action: The last sentence on page F-1 will be changed to read:

"Sections F.7 and F.8 deal with restoration guidelines and maintenance activities."

Commenting Organization: U.S. EPA Commentor: Saric
Section #: F.5.3 Page #: F-30 Line #: 28
Original Specific Comment #: 42
Comment: The text states that trees will be cut 2 inches above their base and that the upper part of the trees will be chipped for mulch. However, Section F.2.4, "Clearing and Grubbing," states that trees will be cut 2 feet above the ground surface. The 2-foot height criterion is based on the wood sampling program (documented in Appendix D), which used samples collected 4.5 feet above the base of the trees. The discrepancies in defining the non-contaminated portion of the trunks of woody plants should be reconciled.

Response: There is no relationship to the 2-foot height criterion in Appendix F and the 4.5 feet sampling location of the trees (Appendix D). The field of forestry recognizes 4.5 feet as a representative location of the entire tree.

DOE notes that there is no contamination of tree tissue material, as documented in Appendix D of the report. Therefore, there is no need to define a non-contaminated portion of a tree trunk.

Action: Appropriate sections in the SEP will be edited to remove reference to a specific cut height. The following text will be inserted in the appropriate sections of Appendix F:

"Trees and shrubs will be cut at a level above grade that corresponds to appropriate health and safety protocols (e.g., use of chain saws and tripping hazards)."

Commenting Organization: U.S. EPA Commentor: Saric
Section #: F.5.4 Page #: Figures F.5-2 through F.5-12 Line #: NA
Original Specific Comment #: 43
Comment: These figures show the general protocols for classifying and disposing of special materials encountered during the excavation process. The text indicates that items that cannot be placed in the OSDF will be transferred to a temporary staging area for pickup. The figures should be revised to include an additional step, transfer of such items off site for reuse (if appropriate) or for treatment and disposal.

Response: Transfer and off-site disposition is addressed in Section 3.0 and Figure 3-4.

Action: None.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: G.1.1.2 Page #: Table G-1 Line #: NA
Original Specific Comment #: 44
Comment: The table presents summary statistics for soil contaminant concentrations detected during earlier studies. The table should be revised to include concentration units of measure such as those units used in Table G-3. This comment also applies to Table G-2 and most of the following tables in Appendix G.

Response: All radionuclide isotopes are given in pCi/g. Total Uranium is given in μg/g (ppm). All metals are given in mg/kg (ppm).

Action: The tables will be edited to include the measurement units.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: G.1.2.2 Page #: G-9 Line #: 1
Original Specific Comment #: 45
Comment: The text defines P_o as the acceptable proportion of samples that may exceed the FRL. The proposed value of P_o should be included in the text so that the calculations on Line 14 of Page G-9 can be verified.

Response: The appropriate value for P_0 in this test procedure is 0.5. This value is alluded to the text of the subject section (e.g., in lines 10 and 13 of p.G-8 and line 2 of p. G-9).

Action: The text will be revised to explicitly state that $P_0 = 0.5$.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: G.2.2 Page #: G-23 Line #: General
Original Specific Comment #: 46
Comment: The text and Table G-14 discuss use of the RTRAK to identify hot spots. However, the nonstandard criterion of three times the FRL is used to define hot spots. The text and Table G-14 should be revised to reflect the accepted criterion of twice the FRL. This comment also applies to Section G.2.3 and Table G-15.

Response: See Response to U.S. EPA General Comment 2 and OEPA Specific Comment 27.

Action: Revise the text of Section G.2.3 and Table G-15 in accordance with the Actions to the referenced comments; no revision needed to text of Section G.2.2 or Table G-14.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: H.4 Page #: Tables H-2 and H-3 Line #: NA
Original Specific Comment #: 47

Comment: The tables show a few target analytes (including arsenic, cadmium, and Aroclor 1260) with minimum detection limits exceeding their FRLs. The accompanying text in Section H.4 should be revised to state that the listed rapid analytical methods cannot be used in areas where contamination with such analytes may exist.

Response: Agree.

Action: The following text will be added to line 9, page H-9 before the beginning of the last sentence:

"Additionally, it is noted that a few target analytes (i.e., arsenic, cadmium, and Aroclor 1260) have FRL values that are below the detection limit of the rapid analytical methods listed in Tables H-2 and H-3. Therefore, standard laboratory analytical methods must be used to quantify these constituents."

RESPONSES TO OHIO EPA COMMENTS ON THE JULY 1997 DRAFT OF THE "SITEWIDE EXCAVATION PLAN"

GENERAL COMMENTS

Commenting Organization: Ohio EPA Commentor: DHWM
Section #: Sections 1.3.1.3, 2.1.1, and 2.1.1.1 Pg #: Line #: Code: M
Original Comment #: 1

Comment: In regard to the RCRA/CERCLA Integrated Closure Agreement, the SEP should incorporate additional conceptual information concerning procedures to satisfy closure component requirements of the 29 subject Hazardous Waste Management Units (HWMU's). Specifically, reference any field activity that has been performed to determine the presence and extent of RCRA COC soil contamination attributable to these units. These sections should provide a more direct discussion concerning the issues of any soil contamination and excavation associated with these units. Section 3.3.4.4 seems to imply that the determination of any HWMU soil contamination will take place as part of SEP activity. Please clarify.

Response: The general strategy for closing HWMUs and USTs will be pulled together and organized in one section of the SEP (the currently numbered Tables 2-1 and 2-2 likely will be moved to that section). Per those discussions, the certification/closure process for a HWMU to be closed under the SEP's portion (as opposed to the above-grade D&D portion) of the implementation of the RCRA/CERCLA Integrated Closures Director's Final Findings and Orders (June 4, 1996) is summarized in the action below.

Action: The text in the SEP will be revised to incorporate the following technical approach:

- Bound the needed excavation using predesign sampling and analysis as needed.
- Complete above-WAC-driven excavation in the area first.
- Complete large-scale FRL-driven excavation in the area second.
- Take at least seven physical samples within each HWMU footprint regardless of its size, unless the HWMU footprint is designated as a special Group 1 certification unit (CU).
- Multiple HWMUs within a building footprint can be combined into a CU.
- Delineate the HWMU footprint as a special Group 1 CU when its size exceeds 25% of the Group 1 CU size [i.e., $>15{,}625$ ft^2 (125 ft by 125 ft)], or as multiple Group 1 CUs when its size exceeds the size of a Group 1 CU [i.e., $>62{,}500$ ft^2 (250 ft by 250 ft)].
- Use an ASCOC list expanded to include the HWMU-specific COCs (see SEP Table 2-1) for the particular HWMU CUs for certification physical sampling and analysis.

- Use upper confidence limit on the mean (UCL) comparison to FRL as the criterion for HWMU certification/closure, analogous to that for other FRL certification.

- Provide details of the HWMU(s) certification/closure sampling approach in a dedicated section of the certification design letter for the soil remediation area.

- Provide discussion of the sampling and analytical results for the HWMU(s) certification/closure in a dedicated section of the certification report for the soil remediation area.

- Include analytical results for the HWMU(s) in the certification report for the soil remediation area.

- Ohio EPA acceptance of the certification report for a soil remediation area will document final closure of the HWMU(s) within the footprint of that remediation area.

Predesign phase project-specific plans (PSPs) for soil remediation areas containing HWMUs or USTs will identify whether unit-specific COC sampling and analysis will be conducted during predesign to define/refine the extent of excavation, thus providing early indication of the strategy for the individual soil remediation area. Nevertheless, the integrated remedial design package (IRDP) for a particular soil remediation area (or that for a subdivided sector or phase — e.g., Area 1, Phase II) will present findings of investigations to that point, reference those investigations, and present the strategy for the area. The certification design letter for a soil remediation area (or that for a subdivided sector or phase) will address each (if any) of the HWMUs or USTs contained therein, and the specifics of sampling and analysis (layout, boundaries, size and number of certification units, number of samples, analytical parameters, etc.) to satisfy closure requirements.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: M
Original Comment #: 2
Comment: Ohio EPA disagrees with DOE's proposal for evaluating Th-232, Th-228 and Ra-228 concentrations. The Ohio EPA offers the following proposal to determine the concentrations of thorium-232, radium-228 and thorium-228.

a) DOE's August 29, 1997 letter to Ohio EPA and U.S. EPA indicates that five gamma photons are commonly used to quantify thorium-232, radium-228 and thorium-228. It would be inappropriate to use the two actinium-228 peaks to quantify thorium-228 since actinium-228 precedes thorium-228 in the decay series.

b) The use of the lead-212 peak (0.239 MeV) should not be used due to potential interferences from radium-224 (0.241 MeV) and lead-214 (0.242 MeV) photons. Lead-214 will be present from the uranium-238 decay chain.

c) To quantify thorium-232 and radium-228 the two actinium-228 photons should be used:

Actinium-228	0.911, 0.969 MeV

Equilibrium conditions can be verified through the evaluation of the other photons in the decay chain, namely:

Bismuth-212	0.727 MeV
Thallium-208 (36%)	0.583, 0.511, 2.615 MeV

d) To quantify thorium-228 the following photons should be evaluated:

Bismuth-212	0.727 MeV
Thallium-208 (36%)	0.583, 0.511, 2.615 MeV

All four peaks should be used to determine the concentration of Th-228, using the error weighted averaging technique proposed in the above referenced letter.

Response: DOE has responded to OEPA on this matter in our November 20, 1997 letter to OEPA.

Action: The FEMP radiochemistry laboratory will use the following gamma photon energies to quantify the thorium-232, radium-228, and thorium-228 isotopes:

Thorium-232: 969.1 and 911.1 keV (actinium-228), 583.1 keV (thallium-208), and 238.6 keV (lead-212).

Radium-228: 969.1 and 911.1 keV (actinium-228), 583.1 keV (thallium-208), and 238.6 keV (lead-212).

Thorium-228: 583.1 keV (thallium-208), and 238.6 keV (lead-212).

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: M
Original Comment #: 3

Comment: The SEP should be revised to incorporate reference to the Waste Acceptance Criteria Attainment Plan. Additionally, all changes to the WAC Plan resulting from EPA reviews should be incorporated within the SEP.

Response: Agree.

Action: All WAC Plan comments pertinent to the SEP will be incorporated in the SEP (see Responses to OEPA Specific Comments 17, 18, 23, 26, 30, 39, and 49).

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: M
Original Comment #: 4
Comment: Ohio EPA disagrees with DOE's proposal to use HPGe for certification of any contaminant. Ohio EPA does not believe that sufficient basis exists to accept these data for final certification. The document should be revised to replace all references to the use of HPGe for certification with the collection of physical samples and laboratory analysis.

Response: DOE will not use HPGe for certification decisions until U.S. EPA and OEPA have accepted the technology. Physical samples will be collected and laboratory analysis will be performed to demonstrate certification until the regulatory agencies concur on the use of HPGe for certification.

Action: The SEP will be edited to note that HPGe will not be used for certification decisions until regulatory approval is obtained. All applicable portions of the SEP will be changed to reflect this decision.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: M
Original Comment #: 5
Comment: The document fails to adequately address the Operable Unit 5 ROD commitment to VOC screening during excavation. The ROD states, "A best management approach will also be applied during **all** excavation activities to identify, segregate (and treat as necessary) soil containing concentrations of organic compounds....(emphasis added)." In order to be consistent with the OU5 ROD VOC screening should be incorporated into all excavation activities.

Response: The Operable Unit 5 ROD committed DOE to a best management approach that would identify, segregate, and treat (as necessary) soil containing concentrations of organic compounds at levels that potentially could jeopardize the integrity of the earthen liners of the OSDF. The OU5 ROD did not specify the levels of organic compounds that would be of potential concern. Consultation with OSDF project personnel indicate that a significant volume of soil essentially saturated with volatile organics would be required to introduce a potential threat to the OSDF liners. DOE plans to conduct organic vapor screening at all of the FEMP's soil remediation sites for worker health and safety purposes throughout the excavation process. This vapor screening activity is expected to be adequate for the qualitative "presence/absence" determinations needed to segregate significant quantities of excavated soil that may essentially be saturated with organic solvents. As this screening of the remediation sites for organic vapors for health and safety purposes will be performed at all locations of excavation, the ROD commitment for continuous organic vapor screening during all excavation activities can be fulfilled. The SEP will be revised to note that organic-vapor monitoring will be conducted at all excavation sites. Additional detail will be provided in the SEP to discuss the specifics of the soil segregation and treatment process, should significant quantities of solvent-saturated soils be encountered. It should be noted that little, if any, solvent-saturated soil is expected to be encountered at the FEMP.

Action: The following text will be added to Section 2.4.2.2 and other appropriate sections of the SEP: The screening of the excavation sites for organic vapors will be performed at all excavation locations for health and safety purposes. This screening will be used to identify and segregate additional soil for treatment, thus fulfilling the ROD commitment for continuous organic vapor screening during all excavation activities. The health and safety screening for organic vapors will be performed to provide information needed to implement this best management approach. Additional screening for organic contamination will be performed when elevated concentrations are detected by the screening.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: M
Original Comment #: 6

Comment: The 'hot spot' criteria that was used in the Area 1, Phase I remediation was a 2X the FRL criteria. This criteria was used to drive re-excavation in areas around discrete certification sample locations.

DOE guidance (DOE Order 5400.5 Chapter IV(4)(a)(1)) which has been cited in the Operable Unit 5 ROD as a "To Be Considered" uses a formula that varies the acceptable level of residual soil activity as a function of hot spot size. This formula uses as a factor the square root of 100 divided by the hot spot area squared. The factor is then multiplied by the FRL to give the acceptable residual activity of the hot spot.

The hot spot criteria in Appendix G is not consistent with either of these strategies. The criteria in Table G-15 are less restrictive than DOE guidance. All the criteria in Table G-15 are 3X the respective FRL and there is no distinction between hot spots of various sizes. DOE Order 5400.5 permits hot spots of 3X FRL to be only 10 square meters in size. Table G-15 allows hot spots of 3X FRL to be 300 square feet (roughly 27 square meters) and 200 square feet (roughly 18 square meters).

According to the draft Addendum to the RTRAK Applicability Study dated September 1997, the RTRAK is capable of detecting thorium-232 at less than three times the FRL. Since each RTRAK measurement is 10 square meters, this is perfectly consistent with existing guidance.

Rewrite the hot spot criteria to be consistent with the following:

1. DOE guidance which requires remediation of 30 X FRL areas regardless of size.
2. DOE Order 5400.5 Chapter IV(4)(a)(1)
3. The analytical detection limits of the RTRAK.
4. Excavation of hot spots discovered by discrete certification sampling.

Response: The SEP will be revised to reflect the path forward on hot spot criteria negotiated between DOE, U.S. EPA, and OEPA, as presented in the response to U.S. EPA General Comment 2.

Action: See the action to U.S. EPA General Comment 2.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: M
Original Comment #: 7

Comment: It is difficult to follow the strategy for closing HWMUs and USTs because these topics are spread somewhat piecemeal throughout this Plan. Therefore, Ohio EPA was unable to evaluate the adequacy of the proposed strategy for closure. It would be more convenient if the discussion of HWMUs and USTs were all addressed completely in the same part of the Plan. Nevertheless, it is our expectation that the closure of these units would be accomplished by the proposed mechanism for soil certification units. That is, we expect to receive a remediation strategy for a particular HWMU (or UST) with the IRDP for the appropriate area. The IRDP should outline the remediation strategy (including analytical parameters, sampling frequency, etc.) in an analogous fashion to the strategy to remediate the ASCOCs. Similarly, we expect that the certification design letters will also contain a section addressing each of the HWMUs (and USTs) located within that unit. Final Ohio EPA acceptance of the closure of the HWMUs would be documented in our acceptance of the Certification Report.

Response: Ohio EPA's comment captures the intended general strategy, which has been elaborated on in discussions between the DOE, Ohio EPA, and U. S. EPA. See the response and action to Ohio EPA General Comment 1 and Specific Comment 42.

Action: See the actions to the referenced comments.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: M
Original Comment #: 8

Comment: The document does not provide a basis for the increase in CU size over that implemented in A1P1. Ohio EPA believes the CU sizes used for A1P1 was at the maximum acceptable range. The CU sizes should be returned to 200 x 200 and 400 x 400. In addition, Ohio EPA believes smaller CU sizes may be appropriate for areas such as the production area and A2P1 where heterogenous waste is expected.

Response: DOE, U.S. EPA, and OEPA have met several times on this issue and the path forward is based on the CU size being a multiple of the 125' by 125' grid size used in all the FS residual risk assessment modeling. Two general upper bounds of CU sizes were selected to simplify the certification procedure: 250' by 250' (Group 1) and 500' by 500' (Group 2). The 16-acre Group 3 CU cited in the Area 1 Phase 1 Certification Report is abandoned. Additional factors for consideration during CU delineation were also agreed to.

Action: The CU discussion in the SEP will be revised to reflect the following text:

In general, the CU boundary in a remediated area will be delineated considering both the pre- and post-remediation conditions (i.e., physical and chemical conditions). To ensure that residual contamination within a CU is reasonably homogenous, the CU boundaries will be delineated using the pattern of total radioactivity that is generated during the precertification scan. Within each CU, the range of residual total radioactivity will generally be within one order of magnitude. To the extent practical, a CU will cover an area with similar physical and chemical conditions to ensure valid

statistical assumptions apply to the sampling and data reduction calculations used to make the certification decision. The CU delineations will also need to consider efficient access control and prevention of cross- and re-contamination during the certification process. Also, the number of CUs and physical samples must be manageable in order to facilitate an efficient remediation and certification process. The initial CU delineation, sampling locations, and justification (e.g., RI/FS and pre-certification data) will be presented in an area-specific Certification Design Letter for regulatory review and approval before certification sampling is initiated.

Group 1 CUs will be used in areas that generally have COC concentrations above their respective FRL before remediation, with the nominal CU size up to 250' by 250'. Local area-specific conditions and COC distributions will determine the individual Group 1 CU size. Factors to be considered for reducing the Group 1 CU size from the nominal 250' by 250' dimension include: previous hot-spot and above-WAC boundaries, HWMU boundaries, RCRA areas, storage pile foot prints, previous building foundations, drainage features (e.g., ditch or basin), road ways, former production area fence line, property lines, and previous major pipe lines.

Group 2 CUs will be used in areas that generally have COC concentrations below their respective FRL prior to remediation, with the nominal size up to 500' by 500'. Factors to be considered for reducing the Group 2 CU size from the nominal 500' by 500' dimension include: storage pile foot prints, drainage features (e.g., ditch or basin), road ways, property lines, farm land boundaries, and previous major pipe lines.

SPECIFIC COMMENTS

Commenting Organization: Ohio EPA — Commentor: OFFO
Section #: 1.2.1 — Pg #: 1-7 — Line #: 15-18 — Code: C
Original Comment #: 9
Comment: Please provide clarification regarding "agency-approved integrated approach."

Response: The "agency-approved integrated approach" refers to the integrated site remediation strategy proposed by DOE in 1995 and approved by EPA and OEPA. This approach integrated former operable units into logical remediation projects (e.g., contaminated soil from Operable Units 2 and 5 were integrated into the Soil Characterization and Excavation Project).

Action: Text will be clarified.

Commenting Organization: Ohio EPA — Commentor: OFFO
Section #: 1.3.2.1 — Pg #: 1-16 — Line #: 1-10 — Code: C
Original Comment #: 10
Comment: Soils classified as RCRA hazardous waste from the OU2 firing range area were excluded from disposal in the OSDF. These soils were specifically excluded from on-site disposal by the OU2 Record of Decision. These soils should be referenced here in the SEP and removed from other portions of the document addressing possible treatment and on-site disposal.

Response: Agree.

Action: The following text will be inserted on line 7, page 1-16 after Method 3:

"However, Method 3 is not an option for RCRA toxicity characteristic soil that is present in the OU2 firing range. This soil was specifically excluded from on-site disposal by the OU2 ROD. Additionally, as stated..."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 1.3.2.1 Pg #: 1-16 Line #: 25-26 Code: C
Original Comment #: 11
Comment: Ohio EPA can not envision a situation where soils beneath a remediation facility would not require remediation. Please clarify or remove reference to this possibility.

Response: Agree.

Action: The sentence will be changed to read: "The remediation of soil beneath these facilities will be included in an IRDP that addresses long-term remedial action."

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans/OFFO
Section #: 1 Pg #: 1-17 Line #: 8 Code: C
Original Comment #: 12
Comment: a) No perched groundwater zones are shown on the referenced figure.

b) Additional details should be included regarding integration of perched groundwater remediation into specific soil areas.

Response: a) Perched water zones will be shown on diagrams submitted with area-specific IRDPs. Text that references perched water zones on Figure 1-4 will be removed.

b) Details on the integration of perched groundwater remediation will be added to the relevant IRDPs for areas undergoing soil remediation. DOE and U.S. EPA have met several times to discuss these procedures (twice in December 1997 and once in January 1998) and will continue to meet as needed to achieve consensus on the path forward during IRDP development. Additionally, where these issues overlap with the WAC Attainment Plan, the path forward will coincide with changes made to the WAC Attainment Plan. Also, see the response to U. S. EPA General Comment 8 and U. S. EPA Specific Comment 25.

Action: See associated actions to comment responses noted above.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 1.3.2.5 Pg #: 1-20 Line #: 27-34 Code: M
Original Comment #: 13
Comment: Soils classified as RCRA hazardous waste from the OU2 firing range area were excluded from disposal in the OSDF. These soils were specifically excluded from on-site disposal by the OU2 Record of Decision. Reference to any option other than off-site disposal should be removed from the document.

Response: Agree.

Action: Lines 27 through 34 on page 1-20 and lines 1 through 4 on page 1-21 will be removed.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 1.3.2.10 Pg #: 1-22 Line #: 25-29 Code: M
Original Comment #: 14
Comment: The text fails to recognize the commitment within the Operable Unit 2 ROD to continue federal ownership. Any change from continued federal ownership would require an amendment of the Operable Unit 2 ROD.

Response: Agree. Continued federal ownership of the FEMP property is committed to in the OU2 ROD.

Action: The text "FEMP property, including the" will be added after "continued federal ownership of the" on line 26, page 1-22.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table 1-2 Pg #: Line #: Code: C
Original Comment #: 15
Comment: The Operable Unit 2 ROD established long-term monitoring commitments for the units encompassed by OU2. The table and document should be revised to reflect this commitment.

Response: Agree that the table should be revised. All specific monitoring commitments are addressed in the Integrated Environmental Monitoring Plan (IEMP). Sitewide environmental monitoring is only discussed generally in the SEP.

Action: Operable Unit 2 will be added to the Operable Unit column in Table 1-2 in the "Institutional Controls/Monitoring" row.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table 1-5 Pg #: Line #: Code: C
Original Comment #: 16
Comment: The document should be revised to include dates for design deliverables for Area 8 as well as off-property areas. DOE must show a commitment to address off-site areas that may be contaminated while it addresses contamination on its own property. Additionally, Area 8 is of significant concern to the Natural Resource Trustees for restoration and could allow DOE the potential for early successes.

Response: Agree.

Action: Dates for design deliverables for Remediation Area 8 and other potential off-property remediation areas will be provided in Table 1-5.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.1.1.3 Pg #: 2-4 Line #: 4-10 Code: M
Original Comment #: 17

Comment: As expressed in several Ohio EPA comments on the WAC Plan, significant questions remain regarding the recent revisions to the SED as well as the use of the revised SED in determining both WAC areas and area specific COCs. Additional details need to be provide regarding changes to the SED, data contained and more appropriately excluded from the SED when making conclusions regarding ASCOCs. What function did the validation of the RI/FS data serve if so many additional revisions to the data set are required?

Response: The Sitewide Environmental Database (SED) was created to serve as a central repository for all environmental data collected in support of RI/FS and remediation activities.

In addition to this central repository, there are several related but distinct data subsets contained within the same database system. Specifically, SED consists of the following:

Live SED tables

These are the core data tables in the SED, into which all data entry and electronic data loading is done. The intent is to maintain this dataset as the most complete and up-to-date set of environmental and remediation data possible. If properly documented corrections are required, they are made in these tables. New data is continually added to these tables.

Frozen RI datasets

These datasets were developed in accordance with criteria that was established for the respective operable unit. The OU2 RI data was first assembled in the live SED tables and then copied into 'frozen' tables upon completion of OU2 RI report. The OU5 RI data, which includes some OU2 samples, was first assembled in the live SED, then exported to HNUS offices in Pittsburgh and finally, in June 1994, exported back to the SED into 'frozen' tables. 'Frozen' means the data in the tables is not changed or added to. The purpose of these tables is to have an electronic snapshot of the data that was used to create the RI.

Historical Soils Data (also called SRDIG tables)

There are overlaps among the previously described datasets. All of the OU5 and OU2 samples also remain in the live SED. In addition, a large number of the OU2 samples were included in OU5. In large measure the overlapping samples are the same in each dataset. However, there are some differences due to:

- Different or changing validation criteria
- New information requiring a correction to an existing sample (not a common occurrence)
- Historical data from other sources identified.
- Differences in the way calculated "Uranium, Total" was used.

For these reasons it became apparent to the soils project that some effort was required to standardize the data that was to be used in the SEP.

The Historical Soils tables represent the best efforts to incorporate all soil samples collected on site into one comprehensive data set. Data that was included in these tables included OU5 RI, OU2 RI, SED, Removal actions, and project data. OU5 and OU2 results were excluded from these tables based only on the following:

- Geotechnical sample
- TCLP sample
- Analytical data was rejected in data validation
- Multiple samples collected from the same depth (highest validated result used)
- Samples collected from the waste pit berms
- Sludge samples.

Summary reports can be generated that demonstrate the extent of the changes for each COC.

CMD Dataset

The CMD data set contains data that was collected in support of various construction projects that were conducted at the FEMP. This data was not collected in support of any RI/FS activity, was not validated and previously had not been entered into the SED. This data was entered into the SED in 1996 in order to supplement existing soil data.

How is access to these datasets managed?

The current methodology for 'pulling' soil data involves first defining a set of criteria (i.e. media, project, area, depth of samples, parameters) and then applying this criteria to each of four datasets. These are:

- SRDIG for historical data
- CMD for construction project related data
- FACTS (Fernald Analytical Computerized Tracking System, which is our laboratory information system) for in-progress data. The end use of the data would determine how this in-progress data is utilized.
- SED for any newly completed data as well as any other sample that does not appear in any of the above queries. Data is then reviewed to determine if it should actually included in the data pull.

This process allows us to manage the use of historical data and at the same time to allow access to all the data available.

Action: The discussion in Section 2.1.1.3, and other pertinent areas of the SEP, will be edited to provide the details noted above.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 2.1.2.2 Pg #: 2-6 Line #: Code: M

Original Comment #: 18

Comment: As stated, previously this section must be revised to reflect the existence of the WAC Plan as the document for defining WAC attainment for the OSDF. It may be most appropriate to simply reference the WAC plan in replacement of this section.

Response: Agree. Section 2.1.2.2 will be revised to reflect information in the WAC Attainment Plan. Suggested revisions are presented below.

Action: Delete lines 14 through 28 on page 2-5 and replace with the following text:

"The WAC Attainment Plan (DOE, 1998) provides both the rule book for WAC attainment and a description of the general strategies for complying with the rule book for all of the materials that will be placed in the OSDF. Therefore, details on the WAC for the OSDF are provided in the WAC Attainment Plan and information in the SEP is limited to a brief overview of WAC Attainment Plan.

The OSDF WAC are derived from the FEMP RODs (for radiological and chemical WAC; Table 2-4) and from the OSDF remedial design requirements (for physical WAC; Table 2-5). In accordance with the RODs, the primary material types destined for on-site disposal include all contaminated in-place soil and soil stockpiles (Operable Unit 5); the waste materials present in the South Field, Active and Inactive FlyAsh Piles, the Lime Sludge Ponds, and the Solid Waste Landfill (Operable Unit 2); and the debris resulting from sitewide facility D&D efforts (Operable Unit 3, with small contributions from other operable units). Taken together, these primary materials represent an on-site disposal volume estimated at 2.5 million cubic yards.

Each of the operable units will also generate a range of smaller-volume, remediation-support wastes as a consequence of the cleanup effort, such as personal protective equipment (PPE), water treatment plant residuals, analytical laboratory sample returns, and other miscellaneous solid wastes associated with the cleanup. All of these smaller-volume, remediation-support wastes are also destined for disposal in the OSDF, provided WAC attainment requirements are met.

Where the RODs categorically exclude a material type from placement in the OSDF, the material will be sent to an off-site facility for disposal. The management, control, and off-site disposal of these materials is not part of the scope of the OSDF WAC Attainment Plan. For reference, the primary categorically-excluded materials include the waste pit contents, covers, and liners (Operable Unit 1); nuclear material products, residues, and other special materials (part of Operable Unit 3); and waste materials contained in Silos 1, 2, and 3 (Operable Unit 4). These designated materials will be shipped for off-site disposal, along with the portions of the non-designated waste streams that are determined to exceed one or more of the OSDF WAC."

Insert the following text at beginning of Application of WAC to Soil Remediation:

"Several different screening approaches will be applied to soil to verify WAC. In areas where soil is known to exceed the WAC for one or more constituents (discussed below), soil will be screened with a combination of real-time instruments and physical samples (for non primary radiological COCs and/or for above WAC concerns at depth thereby utilizing a Geoprobe to sample) to delineate the extent of above-WAC excavation. Remediation areas suspected to contain soil above the WAC (e.g., some soil piles), will undergo physical sampling and real-time monitoring, if possible. Areas that contain uranium near the WAC will be evaluated for possible WAC exceedance with real-time scanning. Physical sampling will be conducted in suspected technetium-99 above-WAC areas. In areas that are known to contain soil with COCs below WAC (e.g., west of Paddys Run), real-time instruments, after EPA approval of necessary real-time documentation, will be used to confirm the absence of above-WAC material.

Details on the use of real-time instruments and collection of physical samples will be provided in area-specific predesign project specific plans and IRDPs. In general, existing data will be pulled from the SED and evaluated to determine the number of samples with COCs above their WAC in the relevant area. If the number of existing sample results (RI-based) are deemed to be insufficient to make a decision on WAC excavation, due to limited coverage or excessive results at a detection limit above the WAC, additional physical samples, to ascertain vertical extent of contamination at depth, and/or real-time measurements will be proposed during the predesign investigation project specific plans.

Change lines 31 and 32 on page 2-5 as follows (Note: Table 2-6 is eliminated) and delete lines 1 through 4 on page 2-6:

"Based on current information in the SED, only five COCs (uranium, technetium-99, bis(2-chloroisopropyl)ether, 4-nitroaniline, and trichloroethene) are present at concentrations that exceed their WAC values."

Change line 6 on page 2-6 as follows and place as a continuation of above paragraph:

"Bis(2-chloroisopropyl)ether, 4-nitroaniline, and trichloroethene were used in ..."

Commenting Organization: Ohio EPA Commentor: DSW

Section #: 2.1.2.2 Pg #: 2-6 Line #: 6 Code: E

Original Comment #: 19

Comment: "Of the remaining five constituents (shaded)" should read "Of the five constituents (unshaded)."

Response: The text and table references have been eliminated.

Action: Remove Table 2-6 and change text as noted in the action to Comment 18.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: 2 Pg #: 2-6 Line #: 28 Code: C
Original Comment #: 20
Comment: This sentence should be revised to indicate that soil to be disposed of in the OSDF will have concentration above FRL but below WAC for the given COC.

Response: Agree.

Action: Sentence on line 28 will be changed to read "In such cases, the above-WAC materials will be excavated prior to excavation of the below-WAC/above-FRL soil to be disposed of in the OSDF."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.1.3 Pg #: 2-9 Line #: 15-17 Code: C
Original Comment #: 21
Comment: Ohio EPA does not concur with the stated approach. Ohio EPA proposes an alternative method in a previous comment.

Response: See the rsponse to Ohio EPA General Comment 2.

Action: See the action to Ohio EPA General Comment 2.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: 2.1.3 Pg #: 2-9 Line #: 15-17 Code: C
Original Comment #: 22
Comment: The statement is made that the FRL for thorium-232 will be used to assess use attainment of radium-228. Both DOE and OEPA environmental monitoring surface water sampling data has been for radium-228 and not thorium-232. In order to remain consistent with historical sampling, the FRL attainment for surface water levels of radium-228 should be determined using sampling data for radium-228, not thorium-232.

Response: Agree.

Action: Sampling data for radium-228 will be used to assess the radium-228 FRL in surface water.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 2.1.3.1 Pg #: 2-9 Line #: Code: C

Original Comment #: 23

Comment: As expressed in several Ohio EPA comments on the WAC Plan, significant questions remain regarding the recent revisions to the SED as well as the use of the revised SED in determining both WAC areas and area specific COCs. Additional details need to be provide regarding changes to the SED, data contained and more appropriately excluded from the SED when making conclusions regarding ASCOCs.

Response: See the response to Ohio EPA Specific Comment 17.

Action: See the action to Ohio EPA Specific Comment 17.

Commenting Organization: Ohio EPA Commentor: DSW

Section #: 2.1.3.2 Pg #: 2-10 Line #: 19-21 Code: C

Original Comment #: 24

Comment: See previous comment regarding Th-232.

Response: See the response to Ohio EPA General Comment 2.

Action: See the action to Ohio EPA General Comment 2.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans

Section #: 2 Pg #: 2-12 Line #: 16 Code: C

Original Comment #: 25

Comment: Please clarify what is meant by "the averaging area generally ranges from 100 to 10,000 square meters and higher for land areas."

Response: Agree.

Action: Statement will be clarified as follows "....the area used as the basis for the cleanup guideline generally ranges from 100 to 10,000 square meters (or larger) for land areas."

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 2.2.1 Pg #: 2-14 Line #: 3-4 Code: C

Original Comment #: 26

Comment: WAC are established in the WAC Plan. Revise the text accordingly.

Response: Agree.

Action: Text will be changed to read "WAC for the OSDF are established in the WAC Attainment Plan."

Commenting Organization: Ohio EPA Commentor: DSW
Section #: 2.2.3 Pg #: 2-17 Line #: 7-20 Code: C
Original Comment #: 27

Comment: What area will be characterized using the HPGe. As I understand it, if the area is a flat area and the height of the HPGe is set at 3 feet above the ground, a larger area will be characterized than if the HPGe is set at 1 foot above the ground. If the hot spot is small, for example the area covered by a drum leaking onto the ground, and the HPGe is set high, then a lower average activity per unit area will be read than if the HPGE is set closer to the hot spot. It therefore seems important to define what size area will be characterized by the HPGe once a sodium iodide detector locates an area of elevated radioactivity (e.g., 78.5 m^2 or 12.6 m^2).

Response: DOE will document the HPGe protocol for delineating hot spots in the "Users Guidelines to Measuring Strategies and Operational Functions for the Deployment of In Situ Gamma Spectrometry at the Fernald Site" (DOE 20701-RP-0006, Revision A, 1998). Also see the response to Ohio EPA General Comment 6.

Action: As stated in the response.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.5.3 Pg #: 2-35 Line #: 16-18 Code: C
Original Comment #: 28

Comment: Ohio EPA believes it is important to review data generated by removal actions and the waste removed as it provides information regarding possible COCs and WAC attaintment issues for the surrounding soils. Any effort to eliminate such information is not acceptable and is needed for making these determinations.

Response: Agree.

Action: Text will be clarified as follows, beginning on line 17:

"...and other activities remain in the SED. Although conditions at the source areas may have changed as a result of the removal action, this information will be used to establish the list of potential COCs and above-WAC conditions at the source and the disposition areas."

--- Remaining text under this bullet will be deleted.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 2.5.5 Pg #: 2-36 Line #: Code: C

Original Comment #: 29

Comment: The decision to leave pilings in place is in conflict with the Operable Unit 3 ROD which provides for the dismantlement and disposition of structures in the former production area. If for technical reasons some deep pilings cannot be removed, each one should be addressed on a case-by-case basis. Factors to be considered when deciding to leave in place or remove a piling should include:

1. The technical difficulties in removing the pilings.
2. Process knowledge about the mobility and quantity of potential contaminants.
3. Analytical results of borings.
4. The final grade of the excavation.

Response: Agree. The decision factors listed in the comment will be considered when making the decision to leave the piling in place. If building pilings cannot be removed, the technical reasons will be addressed on a case-by-case basis in the IRDP of the appropriate area.

Action: Text will be revised to indicate the need to evaluate the decision factors listed above during the development of the IRDPs for areas 3, 4, and 5.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 2.5.7 Pg #: 2-37 Line #: Code: C

Original Comment #: 30

Comment: Ohio EPA is concerned with the effectiveness of administrative controls used to date to prevent contamination of previously characterized areas. Comments addressing this concern have been submitted on the WAC Plan and IMPP. DOE should provide additional detail and emphasis on the physical and administrative controls that will be used to prevent either contamination of certified areas or additional/new contaminants being added to areas previously characterized (e.g., stockpiles).

Response: For the past year, the SCEP project has been developing a comprehensive material inventory and tracking system for bulk materials. While organizational adjustments related to the development and eventual execution of the WAC Attainment, Sitewide Excavation, and Impacted Materials Placement Plans have necessitated an ongoing revision to this system, we believe the basic administrative process it portrays for inventorying and tracking waste material is a sound one. The basic elements of the material inventory and tracking system are as follows:

All remediation, construction, and maintenance projects are required to generate a project waste identification document (PWID) during project planning activities. PWID development includes a review of the Sitewide Environmental Database and a

determination of the character of the waste streams to be encountered. The source location, profile number, estimated volume, and planned disposition for each anticipated waste stream are identified on the PWID. Unique Material Tracking Location (MTL) numbers are used in conjunction with gridded project drawings to designate each source location and any stockpiles where excavated material will be staged. PWIDs are reviewed and approved by the SCEP Project Manager.

The actual movement of waste material is preceded by the preparation of a Field Tracking Log (FTL) which identifies the source and destination MTL as well as the volume of material moved. These FTLs are completed by SCEP field representatives who monitor ongoing work activities.

Data from the PWID, the MTL locations, and the FTL are all recorded into an electronic database (the Integrated Information Management System, or IIMS) which ties the SED data to the stockpile placement via the FTL. IIMS reports can list the volume in each stockpile, the source of the material in a stockpile, and the SED data associated with the material in the stockpile. Other reports can also track where excavated soils were staged during project activities.

While we are confident that the material inventory and tracking process is effective, we do acknowledge weaknesses in its application. One significant weakness has been administrative controls to ensure routine application of the PWID planning process to projects not directly associated with soils remediation projects. This weakness will be addressed by linking the generation of a PWID to the issuance of the FEMP's well-recognized internal penetration permit. This will extend control to the occasional maintenance-type actions that occur outside of the soil remediation project. At a site of this complexity and size, the FEMP recognizes that often the most effective control is to extend an existing program into the new area desired, rather than creating something new that is not easily publicized.

A second weakness has been inconsistent application of engineering controls. A stockpile control system is being formalized, which requires perimeter fencing and color-coded placards. The placard identifies the MTL number, status of the staged material relevant to the OSDF WAC, a contact name and phone number, and the statement "No unauthorized use." These requirements apply to stockpiles sitewide. However, the requirements do not apply to "working stockpiles" (e.g., excavated soils staged for backfill upon completion of the activity) unless they remain inactive for 45 days or more. Other controls directed at wind and water erosion include application of cover (e.g., crusting agent, vegetation or tarp) to stockpiles that are inactive for 45 days or more.

The waste generator projects will have responsibility for waste material identification, segregation, handling, and inventory control and management. WAO will perform full-time oversight of project activities to monitor the integrity and accountability of these functions. Necessary for WAO acceptance of any waste material for placement

in the OSDF will be the demonstration of traceability to the materials' point of site origin.

Action: Revise Section 2.5.7 to address items noted in the response and note the following stockpile management approach:

- Define clear project responsibilities regarding stockpile management through clear site procedures
- Establish a full inventory of all the existing stockpiles and track future movement of materials in and out of the stockpiles through the IIMS
- Provide color-coded designations and physical access controls for all non-working stockpiles to prevent mixing of materials
- Provide sufficient dust and runoff controls of all stockpiles
- Use underlying geotextile or infiltration barrier when necessary
- Conduct sufficient WAC attainment characterization, including multi-phase physical sampling, potential TCLP tests, and statistical analysis before the final excavation and disposal of the RvA 17 stockpiles.
- After removal of a stockpile, remediate and certify underlying soil with COCs identified in the pile if an infiltration barrier was not installed under the pile.
- Establish unloading, loading, and/or decontamination procedures for the centralized above-WAC pile and the OSDF staging area.
- Areas that are undergoing remediation or certification, access will be appropriately controlled to ensure areas are not re-contaminated or contamination is spread.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: Table 2-7 Pg #: Line #: Code: C

Original Comment #: 31

Comment: As stated in previous comments, Ohio EPA is concerned with the adequacy of the database used to make decisions regarding WAC and FRLs. Inconsistencies between data presented in this table and Table 2-2 serve to further this concern (max ethylbenzene listed as 0.747 in Table 2-7 while Table 2-2 reports a concentration of 2.9 ppm for ethylbenzene). Ohio EPA believes a detailed reanalysis of the available data for making WAC and FRL determinations is needed. In addition the document

should be revised to explicitly state all data included and excluded from the database used in these determinations.

Response: Table 2-2 was created from the UST Removal Action Reports and Table 2-7 was created by combining Tables 4-14 and 4-15 from the OU5 RI. Problems with using different data sets created from the SED and proposed solutions are presented under the response and action to Comment 17. Future decisions regarding WAC, FRLs, and COC selection will be made on an area-by-area basis in the IRDPs per the query hierarchy discussed under the response to Comment 17. All data included and excluded from the WAC and FRL evaluation will be noted and documented in the predesign investigation PSPs and IRDP.

Action: Remove Table 2-7 and conduct screening exercise in area-specific predesign investigation PSPs and IRDP.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: Table 2-8 Pg #: Line #: Code: C

Original Comment #: 32

Comment: a) Footnote "c" referenced with Constituents of Ecological Concern is not included with the Notes.

b) See Ohio EPA comments on the WAC Plan regarding WAC COCs (e.g., tetrachloroethene).

Response: Agree for (a). DOE will acknowledge in the callout for Table 2-8 that this is a preliminary list of COCs that is subject to change based on the collection of future data.

Action: a) The superscripted "c" will be removed from the table.

b) Page 2-10, lines 15 through 21 will be changed as follows: "A preliminary data assessment identified 5 primary COCs, 28 secondary COCs, and 3 ecological COCs, along with the driver for their remediation (Table 2-8). This list is a preliminary list and is not intended to serve as a final list of COCs site wide. As each remediation area is further investigated during the IRDP process, this preliminary list may be amended to account for additional COCs."

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 3.1.2 Pg #: 3-5 Line #: Code: C

Original Comment #: 33

Comment: In order to ensure above WAC material are not placed in the OSDF, Ohio EPA recommends evaluating concentrations of WAC COCs in locations which include concentrations approaching the WAC but not known to exceed. In other words don't

just look in areas known to exceed the WAC but also in areas that approach the WAC concentration to ensure adequate characterization has been completed.

Response: All remediation areas will be evaluated with the RTRAK/RSS and/or HPGe for the presence of uranium above the WAC, as much as practical. The real-time user's manual will define the trigger points at which the RTRAK/RSS should be set to conservatively achieve WAC. Where previous data indicate the potential for other COCs to be near or above their established WAC values, these areas and the surrounding media will be investigated for potential above-WAC COCs by the collection of physical samples. Also see the response to Ohio EPA Specific Comment 18. However, the RSS system will not be available for the initial version of the user's manual.

Action: See the action to Ohio EPA Specific Comment 18.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans

Section #: 3 Pg #: 3-14 Lines #: 4-11 Code: C

Original Comment #: 34

Comment: For clarity, this discussion should be revised such that consistent units (ppm v. mg/kg) are used to express the resolution of the HPGe, the ALARA goal, and the FRL.

Response: Agree.

Action: To provide clarity and consistency in discussions that mix units of measurement (ppm versus mg/kg or mg/L), replace ppm with the units of mg/kg for solid media (mass per unit mass), and mg/L for liquid media (mass per unit volume).

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans

Section #: 3 Pg #: 3-16 Line #: 26 Code: C

Original Comment #: 35

Comment: The text should be revised to indicate that the Certification Letter Report will include a discussion of the rationale for final selection of the boundaries for each CU (e.g., where Group 1, and Group 2 CUs are specified).

Response: Agree.

Action: Line 27 on page 3-16 will be changed as follows: "and analysis to present EPA with the rationale used for final selection of the boundaries of each CU, the list..."

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans

Section #: 3 Pg #: 3-18 Line #: 9 Code: C

Original Comment #: 36

Comment: The indicated text should also reference the potential for excavation prior to final delineation of certification units.

Response: Agree.

Action: Line 10 on page 3-18 will be changed as follows: "activities and any additional needed excavation are complete to optimize..."

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 3.3.3.2 Pg #: 3-18 Line #: 17-19 Code: C

Original Comment #: 37

Comment: Please provide additional detail regarding the nature of a "fast-track EPA review cycle."

Response: The fast-track review concept has been dropped. EPA will have 30 days to review the Certification Design Letter.

Action: Lines 17 through 19 will be changed as follows: "Following EPA review and approval of the Certification Design Letter, certification sampling activities (Section 7.2) will be initiated."

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 3.3.3.3 Pg #: 3-19 Line #: 17-20 Code: C

Original Comment #: 38

Comment: This section is inconsistent with statements on the previous page regarding "...EPA approval of the certification design...". Ohio EPA believes formal review and approval of the Certification Design Letter is essential to the proposed excavation and certification approach.

Response: Agree.

Action: Propose rewriting lines 18-21 as follows: "...to commence. Upon EPA review and approval of the Certification Design Letter, certification sampling activities will be initiated."

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 3.3.4.1 Pg #: 3-21 Line #: 5-9 Code: C

Original Comment #: 39

Comment: Ohio EPA disagrees with DOE's assumption that attainment of WAC for primary COCs demonstrates attainment for secondary WAC COCs. Ohio EPA believes it is important to document attainment of all appropriate WAC COC. If DOE insists on pursuing the process discussed in this section, Ohio EPA believes it will result in unacceptable WAC violations at the OSDF.

Response: DOE intends to document throughout the IRDP investigation and post-above-WAC excavation that all appropriate COCs will be characterized sufficiently to meet the WAC. When screening and sampling activities carried out during the IRDP indicate secondary COCs are contained within the excavation boundary of primary COCs, real-time instruments will be used to demonstrate WAC attainment for primary COCs, and by association secondary COCs also. For the special case where secondary COCs, lie outside of the WAC excavation boundary for primary COCs, physical samples will be collected after the above-WAC excavation to demonstrate WAC attainment for secondary COCs. Also see the Responses to U.S. EPA Specific Comments 8, 14, and 22.

Action: Above discussions will be noted in Section 3.3.4.1 and other applicable sections of the SEP. Also see the Actions to U.S. EPA Specific Comments 8, 14, and 22.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 3.3.4.1 Pg #: 3-21 Line #: 12-16 Code: M

Original Comment #: 40

Comment: Ohio EPA disagrees with the entirety of this section. WAC attainment is not volume or area dependent. It is a concentration that is not to be exceed for any material entering the OSDF.

Response: DOE agrees that the referenced text is confusing and will be revised. See the response to U.S. EPA Specific Comment 15.

Action: See the action to U.S. EPA Specific Comment 15.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 3.3.4.3 Pg #: 3-22 Line #: 10-12 Code: C

Original Comment #: 41

Comment: The proposed approach for determining lateral extent at depth based upon surface lateral extent fails to address contaminant migration or contamination that exists solely at depth. The proposed approach will not be adequate for determining later extent at depth.

Response: Agree. The following general approach is proposed. Specific sampling approaches will be developed in the predesign investigation PSPs.

Action: Text in Sections 3.1.3 and 3.3.4.3 will be modified as follows (Note: Figure 3-3 will be modified to follow the text changes):

When the surface extent of COCs is determined, a sampling grid is laid out and Geoprobe borings are placed on perimeter grid nodes that reflect COC concentrations below the FRL or other limiting driver (e.g, RCRA) and a soil core is obtained to a depth of 3 feet or as deep as needed to bound the vertical extent of contamination, considering such factors as process history, contaminant migration and the potential presence of deep sources of contamination. Physical samples are collected at every 1-foot interval and if any sample exceeds the FRL or applicable driver, additional soil cores are obtained at the next furthest removed grid node on the surface (i.e., step outside surface extent). This process is repeated until the required excavation is sufficiently bounded.

In the event the sample from the first depth core is found to be above the FRL or appropriate driver, the soil core at that location will be advanced an additional three feet and samples will be recovered at the associated one-foot intervals. The soil core samples will be analyzed to evaluate the depth of COCs and soil cores will continue to be advanced until the depth of the FRL or applicable driver is established for design purposes.

Commenting Organization: Ohio EPA Commentor: DHWM

Section #: 3.3.4.4 Pg #: 3-22 Line #: Code: C

Original Comment #: 42

Comment: Indicate if the information in this section pertains to the 29 HWMU's to be closed under the RCRA/CERCLA Integrated Closure Agreement.

Response: In accordance with the discussions which led to the agreement referenced in the comment, the FEMP's HWMUs not listed in the currently numbered Table 2-1 [developed from the pertinent Attachment A of the RCRA/CERCLA Integrated Closures Director's Final Findings and Orders (DF&O, June 4, 1996)] have already been closed under RCRA and require no further action under CERCLA. Several of the DF&O Attachment A inactive HWMUs were deferred to CERCLA because of their potential for soil contamination due to the release of a hazardous waste. Other HWMUs do not have the potential for soil contamination (any documented evidence of a spill that could contaminate the soil) but were deferred to CERCLA for other reasons. Other inactive HWMUs were deferred to CERCLA because they were to be removed/closed under the D&D process. Additionally, active HWMUs were deferred to remediation/closure under CERCLA when their active use was to cease. Also see the Response to OEPA General Comment 7.

Action: Text in the currently numbered subsection 2.1.1.1 Hazardous Waste Management Units will be revised to include the discussion presented above in the Response. The currently numbered Table 2-1 will be revised to reflect the most recent status of HWMU closures relative to the original DF&O attachments. Text in the currently numbered subsection 3.3.4.4 will be revised to clarify the scope and approach. Also see action to OEPA General Comment 7.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.4 Pg #: 3-23 Line #: 27 Code: C
Original Comment #: 43
Comment: Please define "ISOPIA."

Response: ISOPIA is a typo.

Action: The typographic error will be corrected to read OEPA.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: 3 Pg #: 3-25 Line #: 13 Code: C
Original Comment #: 44
Comment: HPGe should not be used for certification as a substitute for physical sampling until it has been demonstrated as comparable for the full range of moisture, humidity, and temperature conditions that can reasonably be expected during its deployment at the site. The referenced comparability study clearly demonstrates the potential value of the device but has not yet defined the window of environmental conditions within which it is reliable.

Response: See the response to Ohio EPA General Comment 4.

Action: See the action to Ohio EPA General Comment 4.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: 3 Pg #: 3-25 Line #: 24 Code: C
Original Comment #: 45
Comment: The text should be revised to indicate that the HPGe measurements will be taken in accordance with the practices specified in the appropriate QA/QC document [Sitewide CERCLA Quality Assurance Project Plan (SCQ) or other QC document]. The specific document name should be stated in the revised text.

Response: Agree.

Action: The following sentence will be inserted on line 24 after footnote 4 is called out: All HPGe measurements will be carried out in accordance with the Quality Assurance Plan, which is currently being developed, titled "Real Time Instrumentation Measurement Program Quality Assurance Plan," document number 20300-PL-002.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: 3 Pg #: 3-29 Line #: 15 Code: C
Original Comment #: 46
Comment: The text should indicate that a full suite of 12 or 16 samples will be used for certification of each re-excavated Group 1 CU.

Response: Agree.

Action: Sentence will be changed to read "...they are re-excavated, and sampling and analysis will be repeated for the entire suite of 12 to 16 samples."

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: 3 Pg #: 3-29 Line #: 26 Code: C
Original Comment #: 47
Comment: The subset of samples actually used for certification (e.g., the 12 samples taken from the 16 that were actually collected) should be chosen randomly. The text should provide assurance that the selection process is not biased toward choosing the 12 cleanest samples for use in certification.

Response: The soil samples will be selected randomly, as stated in Section 3.4.2.3.

Action: None.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.5.3.2 Pg #: 3-33 Line #: 18 Code: C
Original Comment #: 48
Comment: Ohio EPA does not agree a 3:1 slope is required for open water but believes such details are best addressed in the NRRP and subsequent design documents.

Response: Agree.

Action: The slope for open water features will be stated in the NRRP and subsequent design documents. Text regarding specific slope will be deleted from the SEP.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 3.6.3 Pg #: 3-36 Line #: Code: C

Original Comment #: 49

Comment: It is important to ensure this section is consistent with those requirements outlined in the WAC Plan.

Response: Agree.

Action: Section 3.6.3 will be edited and made consistent with document control QA/QC discussed in Section 8.0 of the final WAC Attainment Plan.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 3.6.3.4 Pg #: 3-36 Line #: Code: C

Original Comment #: 50

Comment: a) Ohio EPA is under the impression that manifesting of trucks from point of generation to point of placement will be through a written manifest provided to the driver of every truck. Collation and assessments of manifests may best be done in an electronic format but paper/physical documentation in the field is absolutely necessary for a successful and credible operation.

b) Please include a discussion of the role of the WAO in this activity.

Response: a) Agree.

b) See the response to Ohio EPA Specific Comment 30.

Action: a) The proposed waste tracking strategies to be added to the SEP include:

- The Integrated Information Management System (IIMS) is being used (and continuously being enhanced) to track all the excavated bulk material sitewide;
- The IIMS is closely tied to the SED/FACTS, SWIFTS, and FTLS;
- The IIMS is developed and managed by staff experienced with expected conditions and waste materials at the FEMP
- A PWID describing the source location, profile, volume, and tracking number is generated by the IIMS before movement of material;
- Management decisions regarding worker S&H, transportation, storage, treatment, and disposal of excavated materials can be made and tracked through the IIMS;

- All the existing data from historical, RI/FS, and predesign investigations as well as process knowledge are evaluated during the IIMS decision making process;

- All the FRLs, on-property and off-property, are considered;

- The IIMS will identify characterization data gaps when existing data is insufficient to support the required decision making process;

- A manifest system using both written and electronic formats will be used to control the movement of material and to ensure that all parties involved during excavation, transportation, and disposal of bulk materials comply with the relevant procedures.

b) See the action to Ohio EPA Specific Comment 30.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: 4 Pg #: 4-12 Line #: 12 Code: C
Original Comment #: 51
Comment: Figure 4-2 and the referenced text should be revised to consider potential implementation of procedures to address non-attainment for a given CU (e.g., re-partitioning, analysis of archive samples, etc.).

Response: Procedures to be implemented in the event of non-attainment of certification are discussed in Section 3.4.5.

Action: Text will be added in the referenced Section 3.4.5.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: 4 Pg #: 4-23 Line #: 2 Code: C
Original Comment #: 52
Comment: Figure 4-4 and the referenced text should be revised to consider potential implementation of procedures to address non-attainment for a given CU (e.g., re-partitioning, analysis of archive samples, etc.).

Response: See the response to Ohio EPA Specific Comment 51.

Action: See the action to Ohio EPA Specific Comment 51.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 4.3 Pg #: 4-24 Line #: 5-6 Code: C

Original Comment #: 53

Comment: The soils underlying the stockpiles in A1P1 were not certified clean prior to placement. If "certified grade surface" refers to something else please explain.

Response: Agree.

Action: "Certified grade surface" will be changed to "initial grade surface."

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 4.3.1 Pg #: 4-24 Line #: 24-26 Code: C

Original Comment #: 54

Comment: As stated in the previous comment the soils beneath the A1P1 stockpiles were never certified clean. It is disconcerting that the writers of the SEP are not more familiar with the A1P1 activities so that the lessons learned from that project would be incorporated therein. The document should be revised to correct the statements regarding soils beneath the A1P1 piles.

Response: The writers of the SEP are now very familiar with the A1PI activities. Also see the response to Ohio EPA Specific Comment 53.

Action: See the action to Ohio EPA Specific Comment 53.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 4.3.3 Pg #: 4-28 Line #: 24-25 Code: C

Original Comment #: 55

Comment: The soils used in generation of the western soil stockpile in A1P1 were generated from operations within the OU1 area. Tc-99 contamination has been documented with OU1 therefore, Ohio EPA believes it is appropriate to characterize Tc-99 concentrations within the western stockpile.

Response: Agree.

Action: As stated in the Waste Pile Sampling PSP, samples collected from the western stockpile will be characterized for technetium-99 activity.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 4.3.3 Pg #: 4-28 Line #: 27-30 Code: C

Original Comment #: 56

Comment: If the source of soils within the stockpiles is unknown, what basis is there for determining characteristic waste is not present in the stockpiles. Additional data should be provided to support this conclusion.

Response: Comment acknowledged. Where the origin of the existing stockpile is such that its history does not lend itself to a short listing for area-specific COCs, the full list of numerical WAC COCs (including characteristic COCs) will be utilized, as noted by Ohio EPA. For situations where short listing may be appropriate, a multi-phase sampling approach has been discussed with the agencies, to "hone in" on an acceptable short list to be applied to further sampling. A question was raised at the November 5, 1997 meeting with Ohio EPA (concerning this comment and similar comments on the WAC Attainment Plan) about what the approvable document trail would be for pile and container characterization and dispositioning, since these items are not part of any formal IRDP identified at this point. It was agreed that a two step process would be followed for each pile and containerized soil remediation activity: 1) a PSP would be submitted for agency review that prescribes characterization needs and strategy; and 2) following completion of the characterization step, a short report (akin to a letter report) would be submitted for agency approval that would contain the details of the approach for dispositioning these items, based on the characterization information gained. It would contain the basic implementation information conveyed in an IRDP but at a level of detail commensurate with the reduced complexity of dealing with these items. Upon approval, this second-step document would provide the mechanism for gaining agency buy-in to the FEMP's approach for dispositioning the materials. A description of this two step process will be added to the next version of the SEP. Also see the Response to Ohio EPA Specific Comment 30.

Action: Add language in Section 4.3.3 to clarify that the full list of numerical WAC COCs will be utilized for existing stockpiles, where the origin history for the stockpile does not support use of a defensible short list. Where a short listing process can be utilized, it will follow the multi-phase approach discussed with U.S. EPA and Ohio EPA to "hone in" on an acceptable short list to be used for further sampling. A discussion of this process will be added to the document. The actual short listings, should they be utilized, will be provided and justified in the follow up PSPs and second-step implementation documents submitted to the agencies. Also see the action to Ohio EPA Specific Comment 30.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans

Section #: 4 Pg #: 4-30 Line #: 25 Code: C

Original Comment #: 57

Comment: Figure 4-6 and the referenced text should be revised to consider potential implementation of procedures to address non-attainment for a given CU (e.g., re-partitioning, analysis of archive samples, etc.).

Response: See the response to Ohio EPA Specific Comment 51.

Action: See the action to Ohio EPA Specific Comment 51.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.3.3 Pg #: 4-30 Line #: 27-30 Code: C
Original Comment #: 58

Comment: Soils beneath the A1P1 stockpiles were not certified. Additional excavation and physical sampling will be required.

Response: DOE agrees that the soils beneath A1PI soil stockpiles were not certified. A1PII, Sector 3 has been defined to cover the majority of the area in question. The A1PII PSP is in the process of being implemented to certify the area. Prior to certification, the A1PI soil stockpiles were moved south to facilitate the certification sampling. Additional soil was removed from the area as part of the soil piles relocation.

Action: Certification sampling and analysis will be conducted on soil underlying A1PI stockpiles. Also see the Actions to Ohio EPA Specific Comments 30 and 56.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: 4 Pg #: 4-42 Line #: 2 Code: C
Original Comment #: 59

Comment: Figure 4-8 and the referenced text should be revised to consider potential implementation of procedures to address non-attainment for a given CU (e.g., re-partitioning, analysis of archive samples, etc.).

Response: See the response to Ohio EPA Specific Comment 51.

Action: See the action to Ohio EPA Specific Comment 51.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: 4 Pg #: 4-47 Line #: 9 Code: C
Original Comment #: 60

Comment: Figure 4-10 and the referenced text should be revised to consider potential implementation of procedures to address non-attainment for a given CU (e.g., re-partitioning, analysis of archive samples, etc.).

Response: See the response to Ohio EPA Specific Comment 51.

Action: See the action to Ohio EPA Specific Comment 51.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 4.6 Pg #: 4-47 Line #: Code: C

Original Comment #: 61

Comment: It is unclear if this excavation approach addresses the contamination along the bank of the GMR or if that is to be addressed under a separate approach. Please clarify which approach will be used in this area.

Response: The SEP is being revised to include additional off-property areas that may require remediation, and these areas will be designated as Remediation Area 9. Contamination along the bank of the GMR will be addressed under Excavation Approach F, and Section 4.6 will be expanded to account for the remediation of this area.

Action: Modify Section 4.6 to account for the remediation of sediment and soil along the bank of the GMR.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 4.6.2 Pg #: 4-51 Line #: 23-25 Code: C

Original Comment #: 62

Comment: Since the area encompassing the pipeline in A1P2 will not be approvable as certified with subsurface contamination left in place, Ohio EPA recommends removal of the area from the A1P2 certification process and incorporation into an area more appropriate in time frame.

Response: A1PII will be certified in three sectors. The area above the pipeline in A1PII will be certified as part of the Sector 3 certification process after contaminated non-HDPE pipe lines are removed, as described in the IRDP. Removal of the pipeline and material adjacent to and below the pipeline will be carried out according to Excavation Approach F.

Action: Text under Task 3 on page 4-51 will be modified to reflect the items noted in the response above.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans

Section #: 4 Pg #: 4-56 Line #: 6 Code: C

Original Comment #: 63

Comment: Figure 4-12 and the referenced text should be revised to consider potential implementation of procedures to address non-attainment for a given CU (e.g., re-partitioning, analysis of archive samples, etc.).

Response: See the response to Ohio EPA Specific Comment 51.

Action: See the action to Ohio EPA Specific Comment 51.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans

Section #: 4 Pg. #: 4-28 Line #: 12 Code: C

Original Comment #: 64

Comment: It is unclear which soil stockpile is being discussed in the referenced text. It is stated that the sample point density within the "stockpile" will be similar to the sample point density of RI/FS data in the surrounding areas. The text should be revised to clarify which stockpile is being discussed and should include an estimate of the number of samples needed for characterization.

Response: Agree.

Action: Text will be changed to indicate stockpiles, rather than a single stockpile. The number of samples needed for characterization will be stated in the PSPs prior to predesign sampling activities. Also see the action to Ohio EPA Specific Comment 30.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: Figure 4-7 Pg #: Line #: Code: C

Original Comment #: 65

Comment: The figure is incomplete. Additional soil stockpiles have been generated. A pile was created near the STP as a result of placement of the north access road through an uncertified area. Other piles were noted on a recent visit to the VitPP adjacent to the new haul road. Additional piles are being generated in the southern portion of the site as part of the Injection/Extraction well system setup. The fact that piles are being generated faster than maps locating them can be generated speaks to the need for more administrative and physical control over pile generation. These piles will now require separate sampling and excavation procedures. The figure should be revised to comprehensively define all existing soil stockpiles.

Response: Agree. Also see the response to Ohio EPA Comment 30.

Action: Figure 4-7 will be updated to identify all existing soil stockpiles. Also see the action to Ohio EPA Specific Comment 30.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 5.1.2.2 Pg #: 5-6 Line #: 13-14 Code: C

Original Comment #: 66

Comment: Ohio EPA requests that a copy of the "Fugitive Dust Control Sitewide Guidelines" be provided with the comment response package or as an Appendix to the SEP.

Response: The fugitive dust control BAT requirements and fugitive emission limits for the FEMP have been determined and documented via multiple correspondences between OEPA and DOE on the subject (the most recent of which are DOE's June 27, 1997 letter DOE-1133-97 to Ohio EPA, and Ohio EPA's acceptance letter in response). The

culmination of that process, in accordance with the correspondences, was development of a document (RM-0047) to disseminate the requirements sitewide to the various FEMP implementing projects and organizations, and incorporation of the requirements into the plans for individual remediation projects. Amongst those are the following:

- RM-0047, "Fugitive Dust Control Requirements" (misidentified in the SEP as "Fugitive Dust Control Sitewide Guidelines") — presents the fugitive dust control BAT requirements and fugitive emission limits, making them applicable sitewide to the FEMP projects. Presents the same BAT summary table as found in DOE-1133-97. Also presents citations to the pertinent regulations (OAC and 40 CFR) and measurement methodologies contained therein. Developed in parallel to the text contained in the SEP.

- "Sitewide Excavation Plan" (SEP, 2500-WP-0028), Section 5.0 — presents as subsection 5.1.2.2 the BAT requirements and fugitive emission limits (from the BAT determination and RM-0047), as they apply to and are to be implemented by the Soil Characterization and Excavation Project. Presents as Table 5-1 the same (albeit reformatted) BAT summary table as found in DOE-1133-97 and RM-0047. Developed in parallel to the text contained in RM-0047.

OEPA has reviewed and approved the BAT determination for the FEMP. The dust control requirements applicable to the SCEP soil remediation projects presented in the SEP have been developed from the BAT, and similarly have been reviewed by Ohio EPA. By nature of its development RM-0047 is highly repetitious of the BAT determination and the text already in the SEP. For these reasons, DOE believes provision of RM-0047, either along with this comment response package or as an appendix to the SEP, is not necessary. Also see the Responses to OEPA General Comment 3 and Specific Comment 46 on the Area 2 Phase I IRDP on fugitive dust controls.

Action: Correct the "Fugitive Dust Control Sitewide Guidelines" SEP reference to "Fugitive Dust Control Requirements" (RM-0047).

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 5.1.2.2 Pg #: 5-7 Line #: 17-36 Code: C

Original Comment #: 67

Comment: The source of the definitions provided here should be referenced. Specifically, definitions from the BAT determination should be incorporated where applicable. Unpaved roads are to be designated by Ohio EPA and DOE prior initiation of operations in a given area. Obviously, this requirement within the BAT determination has not been implemented to date. The document should discuss at what point in the design or field activity such a delineation will occur.

Response: The source for the definitions will be cited; definitions from the BAT determination will be incorporated, where applicable. It is DOE's understanding from the BAT

determination discussions in 1996-1997 that the design drawings of a SCEP IRDP (submitted at the 90% design completion stage) are to delineate roads, and together with the technical specifications of a SCEP IRDP (also submitted at the 90% design completion stage), are to designate whether the road is paved or unpaved, and has been implementing the Area 1, Phase II and Area 2, Phase I SCEP IRDPs accordingly.

Action: Cite sources for definitions in Section 5.1.2.2, using BAT determination definitions when appropriate, and incorporate text to indicate the need to delineate roads in the IRDP.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 5.1.2.2 Pg #: 5-8 Line #: 1-2 Code: C

Original Comment #: 68

Comment: Ohio EPA believes all project personnel are responsible for control of fugitive emissions. Period inspections may not be sufficient to achieve the requirements of the BAT determination. Key personnel who are always at the work location should be empowered to implement or escalate emission control measures.

Response: DOE also believes that all project field personnel are responsible for control of fugitive emissions; the importance of dust control is stressed in the pre-bid meetings for potential bidders/offerors on the contract solicitations to implement the SCEP IRDPs. As indicated in the text, it is up to the contractor to develop a system to implement its dust control responsibilities (extracted from the subsection 5.1.2.2 text and communicated in Part 6 of the solicitation package), to present that system in a dust control (a.k.a suppression) plan to be submitted to FDF for review and approval, and to implement in accordance with the approved plan. Beyond that plan, periodic inspections (either FDF alone or joint FDF-contractor) will occur to ensure that dust control is being adequately implemented. It should be noted that, as a matter of contractual control, only certain key (pre-designated FDF) personnel will be allowed to direct the actions of the contractor. The current wording of subsection 5.1.2.2 taken as a whole communicates these intents. Also see the Responses to OEPA General Comment 3 and Specific Comment 46 on the Area 2 Phase I IRDP on fugitive dust control.

Action: None.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: 5.1.2.2 Pg #: 5-9 Line #: 14-16 Code: C

Original Comment #: 69

Comment: The section references an "above table" that does not exist. Please insert the referenced table.

Response: Agree.

Action: "Above table" will be changed to Table 5-1.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.1.3 Pg #: 5-15 Line #: 6-8 Code: C
Original Comment #: 70

Comment: Chips should not be applied to any area which has not been certified. Placement of chips in such areas will impede the effectiveness of real-time measurements as well as complicate soil sampling activities. In addition, to the extent possible it is preferable to keep such material out of the OSDF thus placement in and area to be remediated would be undesirable. Ohio EPA recommends stockpiling of chips in one of the existing chip stockpile areas until needed for restoration activities.

Response: Woodchips will be stockpiled until needed for conducting restoration activities on certified areas. Prior to restoration activities, however, DOE also intends to utilize small quantities of woodchips from the stockpiles for landscaping and maintenance (mulching, unpaved walkways, etc.). DOE intends to utilize the existing woodchip stockpile location as long as possible (e.g., until the soil remediation area in which it is located undergoes soil remediation). However, due to the time frame for which the SEP must be written to encompass, it is prudent to acknowledge the reasonably anticipated need to create new woodchip stockpiles in suitable locations in order to manage such materials until they are used in restoration activities.

Action: The text on woodchip management will be revised consistent with this response and that for Ohio EPA Specific Comment 71.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: 5.1.3 Pg #: 5-15 Line #: 25-39 Code: C
Original Comment #: 71

Comment: Ohio EPA has experienced problems with leachate from woodchip stockpiles and believes the runoff to be potentially detrimental to the water quality. As a problem with the runoff can be anticipated, the issue should be addressed in a proactive manner. Potential solutions include moving the stockpile to a location that doesn't drain directly into Paddy's Run (e.g., the southern waste units woodchip pile being placed in the met tower area), or capturing and treating the leachate.

Response: Agree. Drainage from wood chip stockpiles will be controlled by locating the wood chip stockpile in a location that will not drain directly into Paddys Run, or by employing runoff diversion methods such that concentrated runoff from the pile will not drain directly to Paddys Run.

Action: The text will be revised to reflect this.

Commenting Organization: Ohio EPA Commentor: DSW

Section #: 5.1.3 Pg #: 5-16 Line #: 10-18 Code: C

Original Comment #: 72

Comment: This paragraph is misleading in that storm water degradation can occur from increased sediment loads, whereas the statements in the paragraph lead the reader to believe that contamination of the surface water runoff would only occur from COCs exposed. The increased sediment is in itself a contaminant of storm water runoff and increases in sediment loads can be expected any time top soil is disturbed. Treatment of storm water runoff via sediment basins/traps, silt fences, etc. will be necessary whenever soils are disturbed.

Response: Text in previous paragraphs of the subject subsection indicate that sediment loads in storm water runoff will be controlled using appropriate erosion and sediment controls, and that the particular controls to be implemented for a soil remediation area will be specified in the integrated remedial design package (IRDP) for that remediation area.

Action: Text will be added to emphasize that sediment loads in storm water runoff will be controlled using appropriate erosion and sediment controls (e.g., silt fences, conveyance ditches, and sediment traps/basins). Also, to clarify the intended scope of the discussion, the first sentence in the current line 11 will be revised to read: "The need to provide treatment *(beyond erosion and sediment controls)* is best determined..." [*italics* used to emphasize the text to be inserted]. Similarly, the text in the current line 5 of the same page will be modified to read "the need to provide treatment *(beyond erosion and sediment controls)* for storm water...".

Commenting Organization: Ohio EPA Commentor: DSW

Section #: 5.1.3 Pg #: 5-19 Line #: 10-19 Code: C

Original Comment #: 73

Comment: There are two issues with this paragraph:

1) The paragraph states that uranium will be monitored and if levels increase so that the FRL is exceeded in the dissolved fraction, then additional area specific parameters will be monitored. However if the ASCOC in the area of remediation is something other than uranium (e.g., technetium 99) then levels much higher than the FRL could leave the remediation area in surface water without detection. Upward trends in the ASCOC could also be missed. In areas where the ASCOC is something other than uranium, monitoring for the ASCOC may be warranted.

2) Comparing only the dissolved fraction of uranium against the FRL seems ill advised. The FRL is based on total uranium and it would be prudent for the area specific monitoring to trend total uranium in the discharge from control structures. Then any trends that indicate an exceedance of the FRL could be addressed at the remediation project prior to discharge through an NPDES discharge point. To monitor

for the dissolved fraction only does not seem nearly as useful or prudent. Monitoring for total uranium rather than only the dissolved fraction is recommended.

Response: Agree.

Action:
1) Because uranium is the principal site COC, it will remain as the SEP's sitewide default indicator parameter. The text (beginning at line 28 of p. 5-18) will be revised to indicate that a project-specific IRDP will designate whether an ASCOC parameter other than uranium will be used as the indicator parameter due to it being the principal ASCOC. Additionally, the reference will be generalized to the human-health-protective FRL for the indicator parameter, rather than to uranium only.

2) The text in the subject paragraph will be revised to indicate that the monitoring will be for the total (i.e., the samples will not be filtered), rather than the dissolved, fraction. Similarly, related text in lines 14 - 26 of p. 5-18 will be revised to remove the references to dissolved fraction.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: 6 Pg #: 6-3 Line #: 21 Code: G
Original Comment #: 74
Comment: Change "This procedures/" to "These procedures/."

Response: Agree.

Action: "This procedures" will be changed to "these procedures."

Commenting Organization: Ohio EPA Commentor: DSW
Section #: Table A-2 Pg #: A-5, A-6 Line #: Code: C
Original Comment #: 75
Comment: The Threatened and Endangered Species Section of Table A-2 does not reference the Cobblestone Tiger Beetle found in the Great Miami River in the vicinity of outfall 001.

Response: According to the U.S. Fish and Wildlife Service, the Cobblestone Tiger Beetle is not a threatened and endangered specie, merely a candidate. Therefore, it does not appear in Table A-2.

Action: None.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: Appendix B Pg #: B-8 Line #: 26 Code: C
Original Comment #: 76

Comment: Clarify the plan for surface water drainage from Remediation Area 3. The text states that drainage will be directed to the storm drain in Area 4B. Figure B-7, however, shows drainage path is into Area 4A.

Response: Agree.

Action: The text and Figure B-7 will be edited to conform with the currently proposed surface-water drainage plan for Remediation Area 3.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: Appendix B Pg #: B-9 Line #: 4 Code: C
Original Comment #: 77

Comment: The sentence beginning on this line pertains to Remediation Area 5 and should be moved to Section B.2.8.

Response: DOE agrees that the referenced text is confusing and, as a result, will be revised.

Action: The sentence beginning on line 4 belongs where it is placed. However, it will be clarified by stating "...the storm drain within Remediation Area 4A."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix C Pg #: Line #: Code: C
Original Comment #: 78

Comment: The Appendix leaves the reviewer with a significant level of confusion regarding steps taken to reduce the list of COECs and the basis for the conclusions/recommendations. Ohio EPA recommends a meeting to further discuss the steps used to evaluate and reduce the list of COECs. In particular walking through the steps for each contaminant eliminated may be necessary. In addition it is necessary that the Natural Resource Trustees review the Appendix to ensure agreement on the list of COECs and potential impacts upon restoration activities.

Response: Agree. DOE and OEPA met on these issues on 11/19/97. The SEP was provided to the other NRTs.

Action: As a result of the meeting with OEPA, DOE will re-organize the sitewide COEC screening/selection process (Appendix C) into clearly-defined steps. Each step in the process will apply a specific criterion to eliminate a certain number of COECs from further consideration. The perimeter areas COEC evaluation that currently exists in Sections C.2.2 and C.3.2 will be included in later steps. By conducting this stepped

process, DOE and OEPA can clarify the selection criteria and focus attention on the relatively few numbers of COECs that remain a concern.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: C.2.1.2 Pg #: C-7 Line #: 8 Code: E
Original Comment #: 79

Comment: It appears as though the text should refer to Table C-4 rather than C-3 and should be changed to indicate that the BTV or FRL used is listed in bold.

Response: Agree.

Action: Revise text accordingly.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: C.2.1.4 Pg #: C-8 Line #: 1-2 Code: C
Original Comment #: 80

Comment: Eliminating COECs because there were less than five detections an order of magnitude greater than the BTV seems inappropriate and arbitrary. These sample points could be indicative of levels higher or more widespread than that appearing in the database. At this point in the screening process it is advisable to retain those COECs for further evaluation.

Response: Additional descriptions will be included for COECs with concentrations above BTVs, which were subsequently eliminated after further evaluation of available information. For example, the BTV for 4,4'-DDE is 0.1 mg/kg. A total of 1,110 samples were taken sitewide and analyzed for 4,4'-DDE. Of these samples, 13 detections were recorded. Of the 13 detections, one concentration was above the BTV, with a concentration of 0.12 mg/kg. The next closest concentration is 0.038 mg/kg. The 0.12 mg/kg concentration was found in a seven-foot deep composite sample taken adjacent to the K-65 Silos. The other 23 samples taken in the vicinity of the K-65 Silos did not have concentrations of 4,4'-DDE above the BTV. Based on this analysis of existing data, DOE is confident that 4,4'-DDE is not a concern to ecological receptors at the FEMP.

As a screening mechanism, "5 detections/order of magnitude" was used to avoid a detailed review of individual data points within the text. If maximum concentrations are used, then the information above will need to be included for each applicable COEC.

Action: Delete the sentence that starts on page C-7, line 29. Replace with the following statement; "Samples that exceeded a BTV were evaluated with respect to the location, depth, nearby concentrations, and other circumstances surrounding the samples in question. Based on these evaluations, some COECs may be eliminated from further

consideration." Add text in Section C.3.1 to include detailed explanations for each applicable COEC.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: C.2.1.4 Pg #: C-8 Line #: 10 Code: C
Original Comment #: 81
Comment: The footnote three referenced in this sentence raises more questions than it answers. Additional discussion regarding the actions listed in the footnote should be provided.

Response: Agree. This footnote is no longer applicable. All COECs have been evaluated based on remnant data concentrations.

Action: Delete footnote from text.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: C.2.2.2 Pg #: C-11 Line #: 19 Code: C
Original Comment #: 82
Comment: "Impractical" is preferred over "impossible."

Response: Agree.

Action: Text will be revised accordingly.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: C.2.2.2 Pg #: C-11 Line #: 13-16 Code: C
Original Comment #: 83
Comment: Considering the substantial amount of effort and funds expended by DOE to develop the background soils study it is difficult to support or understand the conclusion drawn here. On numerous occasions DOE has claimed the background study generated numbers too low for the site background but on all occasions the site data has proven the background data valid (see Area 1 Phase 1 Certification Report). The higher degree of variability on the Fernald site is more likely a result of DOE operations than glacial actions.

Response: Agree that the background soils study is valid for comparison to Fernald site concentrations. However, aluminum and manganese BTVs are either below or near to site background concentrations. Therefore, background issues still remain for these two COECs.

Action: Delete lines 13-16 on page C-11. Revise sentence on line 17 to state: "For manganese and aluminum, the BTV is near to or lower than..."

Commenting Organization: Ohio EPA Commentor: DSW

Section #: C.2.2.4 Pg #: C-12 Line #: 1-11 Code: C

Original Comment #: 84

Comment: There are three issues with this section.

1) The first sentence of this section, "Some ecological receptors are perceived to be more valuable than others." adds no significant clarification to the section and reflects a potential subjective judgement calls that may be misconstrued by a varied audience. It is recommended that this sentence be deleted.

2) [A] The second paragraph of the section is confusing. The first sentence, "In addition, potential interactions between desirable species and anticipated land uses within the site will be considered during COEC selection." appears to be more closely related to the concept of special considerations in the first section than the example of habitat elimination that follows. That aside, a reference to "desirable species" is not recommended for the reasons stated in the first section of this comment. "Certain species" or "particular organisms" may be less controversial descriptions. [B] The second part of this section the OSDF will not be considered restored habitat and therefore COECs will not be a major consideration, however the area of the OSDF could be habitat for native grasses such as the endangered running buffalo clover, slender finger grass or mountain bindweed and as such consideration of COECs should not be lessened.

3) As indicated above, you may want to change the title of this section "Receptor Values" to something like "Special Consideration Receptors".

Response: 1) Agree.

2) [A] Agree. [B] The OSDF will be sitting on top of the soils in question. The OSDF cap will be constructed with certified soil, and native grasses will not be used in the vegetative cover of the OSDF cap. Suitable habitat does not exist for slender finger grass and mountain bindweed, nor is the FEMP located within their range. While the FEMP does contain suitable habitat for the running buffalo clover, it is not anticipated to be a concern since the cap itself would not provide suitable habitat. Running buffalo clover requires disturbed soils in partial shade. Once established, the OSDF cap will not be disturbed and will be in full sunlight. If running buffalo clover does establish on the cap, it will be composed of certified clean soil.

3) Agree.

Action: Delete the sentence on page C-12, line 2. Replace references to "desirable species" with "certain species" throughout Section C.3. Keep the discussion regarding final land use and ecological receptor use. Replace the title to Section C.2.2.4 with "Special Consideration Receptors."

Commenting Organization: Ohio EPA Commentor: DSW
Section #: C.2.2.5 Pg #: C-12 Line #: 12-16 Code: C
Original Comment #: 85

Comment: This section relates to a previous comment wherein one or two detections greater than the BTV could indicate localized contamination and should be addressed as such rather than discounted as indicated in the previous comment.

Response: If necessary, localized exceedances of BTVs may be investigated through sampling and analysis during predesign and/or certification investigations. However, DOE may be able to eliminate consideration of these localized areas through a review of the existing data. For instance, individual BTV exceedances may be a function of background values (aluminum and manganese) or laboratory bias (molybdenum).

Action: Add a paragraph to Section C.2.2.5 and to include the discussion above. Where applicable, revise Sections C.3 (Results and Discussion, page C-15) and C.5 (Conclusions and Recommendations, page C-48) to include any recommendations for predesign and/or certification investigations.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: C.2.2.6 Pg #: C-12 Line #: 19-21 Code: C
Original Comment #: 86

Comment: What mechanism exists for re-evaluating areas should an area that was likely to be excavated for FRLs is later determined as not necessary to excavate for FRLs? As worded, these COECs would never be addressed in such a situation.

Response: COECs may be re-evaluated during predesign and/or certification investigations for each remediation area. If FRL-driven predesign shows that post-excavation COECs may be a concern, then additional sampling and analysis for COECs can be conducted during predesign and/or certification. DOE will present sample locations in the remnant data set to assist in this evaluation. A figure will show where data gaps at all depths exist within the remnant data set. Further action will be conducted on a case-by-case basis.

Action: Present sample locations for the remnant data set, showing data gaps for varying depths within the remnant data set. Revise Sections C.3 and C.5 to include a discussion on the predesign and/or certification re-evaluation process, if it is determined necessary.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: C.2.3.3 Pg #: C-14 Line #: 15 Code: C
Original Comment #: 87
Comment: There is no Table C-17 and consequently the K_d values are not presented.

Response: Agree.

Action: Add Table C-17.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: C.2.3.3 Pg #: C-14 Line #: 20-21 Code: C
Original Comment #: 88
Comment: This appears to be stating that if no background concentration was available for a particular sub-area, but was available for another area, that a zero concentration was assumed for that particular sub-area. If this is the case, then the background concentration from another sub-area should be used rather than assigning a zero concentration to that sub-area. If that is not what this statement means, it should be clarified.

Response: Background concentrations are sitewide concentrations and are not specific to sub-areas. A zero value was used if a sitewide background concentration was not available. Based on OEPA's concern regarding the use of zero values, DOE proposes using FS-defined detection limits in place of zero values for all inorganic constituents.

Action: Replace the sentence that begins on page C-14, line 20 with "For inorganics, if a background concentration was not available, the FS-defined detection limit was used." Rerun model using FS-defined detection limits for inorganic COECs with no background value. Revise Section C.3.3 (page C-43), if necessary. Revise Tables C-14 to C-16 accordingly.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: C.3.1 Pg #: C-15 Line #: 22 Code: C
Original Comment #: 89
Comment: This refers to figures B-2 to B-4 for the locations for the remnant soil BTV exceedances of antimony, cadmium, and silver however those figures do not show the locations of those exceedances.

Response: Agree.

Action: Revise text to refer to Figures C-5 to C-8.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: Table C-4 Pg #: Line #: Code: C
Original Comment #: 90

Comment: Several chemicals (4,4'-DDE, 4,4'-DDT, benzene, chromium, cyanide, fluoride, n-nitroso-di-n-propylamine, vinyl chloride) are listed in the comments as being either less than the BTV (e.g., 4,4'-DDT) when the maximum concentration that is listed is greater than the BTV, or the concentration in the comments is lower than the maximum concentration (e.g., vinyl chloride). Please clarify.

Response: Several COECs were screened out because of the "5 detections/order of magnitude" criterion described on page C-8, in spite of their having a detection greater than their BTV. In other instances, wrong maximum concentrations were listed.

Action: Discuss further the use of maximum concentrations rather than the "five detections/order of magnitude" criterion. If applicable, revise Table C-4 based on existing data and decisions regarding the use of maximum concentrations, background values, etc.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: Table C-5 Pg #: Line #: Code: C
Original Comment #: 91

Comment: This table should also list the maximum concentration as in Table C-4.

Response: Agree.

Action: Revise Table C-5 to include maximum concentration.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: C.3.2.1.3 Pg #: C-18 Line #: 10-13 Code: C
Original Comment #: 92

Comment: This discussion of soil pH would appear to be more significant than presented in the text. The significance relates to the varying excavation depths within the site and thus the varying pH conditions that will exist with associated bioavailability. Additional discussion of the impact of excavation depth on bioavailability should be presented in this and other sections as well as the Natural Resource Restoration Plan.

Response: DOE agrees that further discussion regarding pH is warranted. While this discussion is in the findings for aluminum, it applies to all COECs. The discussion on page C-18 pertains to undisturbed soils where subsoils would not be exposed. In areas where excavation is required, subsoils will become exposed and homogenized with other soils. In general, the buffering capacity of carbonate minerals in FEMP soils should keep the pH between 6 and 8.

Action: Revise Section C.2.2.3 (bioavailability approach, page C-11) to add a discussion on pH relative to all COECs. Additionally, address post-excavation soil pH during the restoration design process.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: C.3.2.1.4 Pg #: C-19 Line #: 18-19 Code: C

Original Comment #: 93

Comment: A) DOE is obviously under estimating the extent of ecological receptors that may use the OSDF upon completion. A fence will exclude a very small portion of possible ecological receptors and is primarily intended to inhibit human intrusion.

B) The basis for concluding Study Area E is of little value to terrestrial wildlife is not evident to this reviewer. Terrestrial wildlife is a very broad term. I would venture to say that numerous terrestrial wildlife not only "occasionally travel rapidly across it" but also reside there and complete their life cycle within the confines of Area E. DOE has obviously developed the view of Area E with some more limited definition of terrestrial wildlife that should be discussed further in the document along with a basis for this definition.

C) These comments regarding Receptor Values are applicable throughout Appendix C.

Response: A) The text will be revised to state that the post closure care and inspection plan for the OSDF has been written (Post Closure Care and Inspection Plan, July 1997) to include the need for routine surveillance checks to ensure terrestrial wildlife are not living in the OSDF.

B and C) The discussion on receptor values is meant to convey the fact that introduced grasslands are not as diverse as other habitats on site. It is true that some species require introduced grasslands for habitat. However, when considering the whole variety of flora and fauna at the FEMP, introduced grasslands are not considered as important as other habitats. It should be pointed out, though, that Study Area E will be restored to an old field/deciduous woodlot successional system. Therefore, Study Area E will ultimately have a more diverse ecosystem than what presently exists. In the case of aluminum, this restoration should make no difference, since aluminum has been discounted as a concern due to high background concentrations.

Action: Revise text throughout Appendix C to discuss the status of potential exposure with respect to restored habitats. The line, "OSDF will not present any future risks to ecological receptors..." will be deleted.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: C.3.2.2.4 Pg #: C-21 Line #: 18 Code: C
Original Comment #: 94

Comment: As stated in the previous comment, Ohio EPA disagrees with the assertion that no suitable habitats for most terrestrial wildlife exists within Areas C, D, or E. DOE's definition of terrestrial wildlife is obviously biased towards particular individuals.

Response: See the response to Ohio EPA Specific Comment No. 93.

Action: See the action to Ohio EPA Specific Comment No. 93.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: C.3.2.5.7 Pg #: C-32 Line #: Code: C
Original Comment #: 95

Comment: Ohio EPA believes manganese should be carried forward as a COEC and that data from sampling within Area B should include analysis for manganese to assess its impact on Natural Resource Restoration activities.

Response: Area 1 Phase I certification sampling within Study Area B revealed only 12 samples that exceeded the BTV, and seven of these were found within the range of background concentrations mentioned above. These concentrations, coupled with the limited bioavailability of manganese with respect to site pH, leads DOE to conclude that manganese is not a concern to ecological receptors within Study Area B.

Action: Include the above discussion in the revised Appendix C.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: C.3.2.6.7 Pg #: C-35 Line #: Code: C
Original Comment #: 96

Comment: Ohio EPA believes Molybdenum should be carried forward as a COEC and that data from sampling within Areas A and B should include analysis for molybdenum to assess its impact on Natural Resource Restoration activities

Response: No BTV exceedances were recorded for molybdenum during Area 1 Phase I certification sampling. These results indicate to DOE that molybdenum is not a concern to ecological receptors in Study Areas A and B.

Action: Include the above discussion in the revised Appendix C.

Commenting Organization: Ohio EPA Commentor: DSW

Section #: C.4 Pg #: C-46 Line #: 10 Code: C

Original Comment #: 97

Comment: This refers to four constituents having remnant concentrations greater than the BTV whereas Section C.5, page C-48, line 2 and Section C.3.1, page C-15, line 22 state that there will be three constituents having remnant concentrations greater than the BTV (see Comment No. 25). This discrepancy should be resolved.

Response: Agree.

Action: Revise text throughout to include molybdenum.

Commenting Organization: Ohio EPA Commentor: DSW

Section #: C.4 Pg #: C-46 Line #: 28-30 Code: C

Original Comment #: 98

Comment: This indicates that final grading was not a consideration in this evaluation. Elsewhere reference is made to contaminants that are too deep to consider ecological receptors even though they may exceed the BTV. What provision is made for the possibility of these contaminants being made available as ecological receptors during final grading?

Response: The reference to the discussion on contaminants being too deep for ecological receptors refers to the evaluation of remnant data results on page C-16. For the COECs in question (antimony, cadmium, silver, and molybdenum), the results were presented regardless of the depth of the remnant samples. Therefore, these COECs will be considered during the design of restoration grading. DOE will present sample locations for the remnant data set and show where data gaps exist at all depths. DOE will use this information to determine if additional sampling/analysis is required within a given area.

Action: Revise text to include the above discussion. Present sample locations for the remnant data set showing data gaps for varying depths within the remnant data set. Make recommendations on additional sampling/analysis as required.

Commenting Organization: Ohio EPA Commentor: OFFO

Section #: Table D-2 Pg #: Line #: Code: C

Original Comment #: 99

Comment: a) The Soil FRL column appears to have a number of errors in which footnote "a" was replaced with a "1".

b) With regard to footnote "b", it is unclear how the statement is relevant to the data collected from the wood samples and why "data on molybdenum should be used cautiously." Additional clarification is requested.

Response: Agree.

Action: The number 1 will be replaced with "a" in the soil FRL column of Table D-2. Footnote b will be removed.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table D-3 Pg #: Line #: Code: C
Original Comment #: 100

Comment: a) The text of the document does not discuss what appears to be significant bioaccumulation of Tc-99 in the tree samples. Additional discussion of this data is relevant considering potential ecological impacts and natural resource issues. Please provide additional data regarding average Tc-99 soil concentrations in the sampled areas, include validated data within the revised document, and information regarding whether any of the concentrations presented in the table lie below the quantification limit.

b) Ohio EPA requests that a copy of the data by sample location be provided with the response to comments.

Response: Tree sample data were provided to the EPA at the DOE/EPA Soils Meeting on January 13 and 14, 1998. As discussed at the meeting, the minimum detection concentration for Tc-99 was 5 pCi/g using the liquid scintillation counter. All tree tissue samples were at or below the minimum detection concentration, therefore no bioaccumulation of Tc-99 was observed in the tree tissue samples. If Ohio EPA is still interested in a copy of the data by sample location, DOE would gladly provide this data under separate cover.

Action: None.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: Appendix G Pg #: G-4 Line #: 27 Code: C
Original Comment #: 101

Comment: The deletion of all RI soil data above the FRL assumes that remediation will be 100 percent effective and is likely to result in an underestimation of the true standard deviation, particularly for constituents with an FRL very close to background (e.g., Radium 226 and Thorium 228). Citation of the computed standard deviations from Area 1 Phase 1 do not answer this concern because these results are from an area that is known to be relatively unimpacted and could be easily remediated. The standard deviation is the primary driver in the sample size calculation. As a result, the number of samples computed may be biased low which could result in an inordinate number of false positive.

Response: The text cited does not properly reflect the procedure used to estimate the expected residual standard deviation. Section G.1.1.5 incorrectly states that all total uranium

results exceeding the area-specific uranium FRLs was filtered out of the dataset used to calculate the residual standard deviation. The filtering method used was a block modeling approach which determines the expected excavation footprint. All remaining sitewide data after removing data representing soil within the excavation footprint were used in the estimation of the expected residual standard deviation. Using this methodology, only the samples representing soil with block modeled average concentrations exceeding the area-specific FRLs were filtered. Individual sample results may exceed the FRL and remain in the residual data set as long as the block average did not exceed the FRL. In the second step of the filtering process, two data subsets were developed: one subset eliminating COC results exceeding "2x FRL" hot-spot criteria level; and another subset eliminating COC results exceeding "3x FRL" hot-spot criteria level. Each subset started with the residual data set, then eliminated sample results to simulate pre-certification and certification hot-spot removal at the identified hot-spot criteria level.

This method does not inherently underestimate variability since many sample results exceeding the area-specific FRLs are used in the estimation procedure. Only data from soil that is expected to be removed and potential hot-spot data were filtered out of the residual data set. We feel that this method is a reasonable *a priori* method of estimating sample size.

The actual certification sample size for each CU, along with written justification, will be submitted in the Certification Design Letter Report as part of the Certification Design Letter for approval prior to actual certification sampling.

Additionally, the text will be modified to reflect an *a posteriori* analysis to determine if the CU sample size was sufficient to meet the confidence criteria. Failure of this analysis would be defined as a Condition 1 Non-attainment Scenario (high variability in the data set) with the subsequent actions as prescribed in Section 3.4.5.

Action: Revise the text to incorporate the above stated clarifications and revisions.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans

Section #: Appendix G Pg #: G-6 Line #: 7 Code: C

Original Comment #: 102

Comment: The procedure(s) that will be used to test for normality should be discussed in the text.

Response: The procedures that will be used to test for normality/lognormality will be added to the text. It should be noted that the tests for normality are better applied to the residuals (difference from the mean) instead of the raw data. This point will be noted and expanded upon in the revised SEP along with the appropriate citation.

Action: Text will be added describing the use of the Shapiro-Wilk and Kolmogorov-Smirnov test procedures as well as the use of normal probability plots. The use of skewness tests to determine symmetry of data distribution will also be discussed.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: Appendix G Pg #: G-20 Line #: 12 Code: C
Original Comment #: 103

Comment: It is premature to assume that sample sizes used thus far in the remediation effort are conservative given that only an area with suspected minimal impacts has been considered. Rather than assuming a one site-wide standard deviation is appropriate for all COCs, a more defensible approach would be to collect an the initial 12 or 16 samples from each CU and compute the standard deviation and required sample size based on these samples. This approach will ensure that a sufficient number of samples are included in the analysis, particularly in the more impacted areas of the site.

Response: See the response to Ohio EPA Specific Comment 101.

Action: See the action to Ohio EPA Specific Comment 101.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: Appendix G Pg #: G-20 Line #: 12 Code: C
Original Comment #: 104

Comment: The SEP should indicate what portions of the site will require sample size recalculations based on changes in sitewide COC FRLs from those that were relevant to Area 1 Phase 1. The lower FRLs in the off-property areas, for example, will have an impact on certification sample size calculations.

Response: It is true that lower FRLs could have an affect on certification sample size calculations. However, the target clean-up level remains a constant fraction of the FRL so this value also is lower. Also, in areas where the FRLs are lower the residual soil concentrations would also be lower and, presumably, the residual standard deviation. Until actual certification sampling it will not be clear exactly how the required sample size to meet the statistical confidence criteria will be affected. As stated in the response to Original Comment 101 an *a posteriori* analysis will be performed to test for sufficiency of sample size. See the response to Ohio EPA Specific Comment 101.

Action: See the response to Ohio EPA Specific Comment 101.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: Appendix H Pg #: H-4 Line #: 4 Code: C
Original Comment #: 105

Comment: The "multitude of potential field conditions" that could affect the HPGe should be summarized in the SEP along with their relative importance. The reader should be

referred to the appropriate document(s) for the testing conducted in support of the claim that none of the conditions have "denied performance at the three FRL level."

Response: From the comment and a re-review of the subject area of Appendix H, it is not clear where the necessary changes are needed. In any event, Appendix H will be modified to reflect information to be contained in the developing document "Users Guidelines to Measuring Strategies and Operational Functions for the Deployment of In Situ Gamma Spectrometry at the Fernald Site" (DOE 20701-RP-006, Revision A).

Action: As noted in the response.