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IMPROVED STORAGE OF SOIL AND DEBRIS REMOVAL ACTION 17 WORK PLAN MARCH 1992

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Improved Storage of Soil and Debris Removal Action 17 Work Plan

Fernald Environmental Management Project
Fernald, Ohio

March 1992
Revision No. 0

United States Department of Energy

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Improved Storage of Soils and Debris
Removal Action 17
Removal Action Work Plan

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LIST OF ACRONYMS

AEA	Atomic Energy Act
ALARA	As Low As Reasonable Achievable
AOC	Area of Contamination
ARAR	Applicable or Relevant and Appropriate Requirement
ASI/IT	Advanced Sciences Inc./International Technology
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratories Program
CSF	Central Storage Facility
D&D	Decontamination and Decommissioning
DFP	Decontamination Facility Pad
DOE	United States Department of Energy
DOE/CH	United States Department of Energy - Chicago
DOE-EML	United States Department of Energy - Environmental Measurements Laboratory
DOE-FO	United States Department of Energy - Fernald Operations
DOT	United States Department of Transportation
DSR	Dose-to-Source Ratios
EML	Environmental Measurements Laboratory
F&ME	Facilities and Materials Evaluation
F&W	Facilities and Warehousing
FEMP	Fernald Environmental Management Project (formerly FMPC)
FR	Federal Register
FMPC	Feed Materials Production Center (currently FEMP)
HDPE	High-Density Polyethylene Elastomer
HSL	Hazardous Substance List
HWFAB	Hazardous Waste Facility Approval Board
HVAC	Heating, Ventilating and Air Conditioning
ICRP	International Commission on Radiation Protection
IRS&T	Industrial, Radiological Safety and Training
ISF	Improved Storage Facility
LDR	Land Disposal Restriction
LLW	Low-Level Waste
MC&A	Material Control and Accountability
MEF	Material Evaluation Form
NCP	National (Oil and Hazardous Substances Pollution) Contingency Plan
NESHAP	National Emission Standards for Hazardous Air Pollutants
NPDES	National Pollution Discharge Elimination System
NRC	Nuclear Regulatory Commission

LIST OF ACRONYMS (continued)

NTS	Nevada Test Site
OAC	Ohio Administrative Code
OBBC	Ohio Basic Building Code
ORC	Ohio Revised Code
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PCB	Polychlorinated Biphenyl (Contaminants)
QAPjP	FEMP Quality Assurance Project Plan
QAPP	Quality Assurance Program Plan
RAWP	Removal Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RSE	Removal Site Evaluation
SMP	Scrap Metal Pad
SRPC	Soil and Rubble Pile Cover
SSOP	Site Standard Operating Procedure
TBC	To-Be-Considered
TCLP	Toxicity Characteristic Leaching Procedure
TSS	Tension Support Structure
TSWP	Toxic and Solid Waste Programs
USC	United States Code
US EPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WEMCO	Westinghouse Environmental Management Company of Ohio

EXECUTIVE SUMMARY

This Removal Action Work Plan provides a response to a Removal Site Evaluation (RSE) and Section IX of the Amended Consent Agreement (Removal Action 17) between the United States Environmental Protection Agency (US EPA) and the United States Department of Energy (DOE) for the improved storage of soil and debris generated at the Fernald Environmental Management Project (FEMP). The plan provides a sitewide management concept and implementation strategy for improved storage and management of soil and debris over the period that is required to design and construct the improved storage facilities, referred to as Phase I. Phase II addresses the management of soil and debris from the time the improved storage facilities are constructed until the final remedial alternatives are selected and implemented in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Records of Decision (RODs). The initiating activity for delineating the appropriate soil and debris controls will be a contaminant assessment. The assessment of contaminants in the affected soil and debris will include a review of existing characterization data, historical records, and process knowledge. If the existing data is insufficient, the material will be sampled and analyzed for specific constituents. The assessment results will be used to determine the management options for the soil and debris in accordance with this plan. These options include decontamination, disposal off site, or storage in either a controlled stockpile or an improved storage facility.

This work plan introduces three primary components for soil and debris management at the FEMP:

1) Formation of Areas of Contamination (AOCs)
2) Establishment of a 100 pCi/g activity concentration for total uranium in soil to determine storage requirements
3) Construction of Improved Storage Facilities

The FEMP has identified three AOCs and proposes to manage the soil and debris within these AOCs. The AOC concept establishes an additional management option to minimize the generation of waste during implementation of maintenance activities and removal actions prior to the issuance of a ROD.

SECTION 1

INTRODUCTION

This Removal Action Work Plan (RAWP) establishes a sitewide soil and debris concept and proposes the construction of four improved storage facilities at the Fernald Environmental Management Project (FEMP).

The need for this removal action was documented in a Removal Site Evaluation (RSE) (enclosed in Attachment 1).

The removal action is identified in Section IX of the Amended Consent Agreement (US EPA 1991) as Removal Action Number 17 - Improved Storage of Soil and Debris. This RAWP is being submitted in accordance with the provisions of the Amended Consent Agreement and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The plan provides a sitewide management concept and implementation strategy for improved storage and management of soil and debris over the period that is required to design and construct the improved storage facilities, referred to as Phase I. Phase II addresses the management of soil and debris from the time the improved storage facilities are constructed until the final remedial alternative is selected and implemented in accordance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Records of Decision (RODs). The selection of the remedial alternative is not included within this document. This management plan will be applicable to Removal Actions, Construction Projects, Maintenance Projects, and other environmental response actions.

1.1 Goals and Objectives

The goal of this RAWP is to establish a sitewide management concept for soil and debris and proposes to construct four improved storage facilities at the FEMP. The plan introduces an Area of Contamination (AOC) concept that will be used in conjunction with ARAR waivers and a field-correlated total uranium activity concentration of 100 pCi/g that will be used to determine soil storage disposition. The plan provides the overall programmatic direction for managing contaminated soil and debris during Phase I and Phase II. Specific objectives of this removal action are to:

1) Minimize the potential for contaminant release from soil and debris to the environment

2) Contribute to efficient performance of interim response actions and other FEMP activities

3) Support the future implementation of the final remediation activities

4) Minimize future soil and debris waste volumes

5) Comply with federal and state Applicable or Relevant and Appropriate Requirements (ARARs) to the maximum extent practicable (Attachment 2 identifies the ARARs for the removal action)

1.2 Contents of the Removal Action Work Plan

This RAWP provides a description of the activities that will be implemented. Section 2 provides background information on soil and debris at the FEMP and justifies the need for improved storage. Section 3 describes Areas of Contamination and FEMP policies, and the management plan for addressing soil and debris prior to construction of improved storage facilities (Phase I). The section also outlines a sitewide management concept and implementation strategy for future soil and debris until the remedial alternatives are selected and implemented (Phase II). Section 4 provides conceptual design information and functional requirements for the improved storage structures. Section 5 identifies ARAR waivers necessary to consolidate materials into the improved storage facilities. To facilitate proper management of soil and debris, ARAR waivers are necessary for the following requirements:

1) Resource Conservation and Recovery Act (RCRA) Land Disposal Prohibition regulations (40 CFR 268.30 to 268.35). This waiver is necessary for instances in which a restricted hazardous waste from an AOC or other on-site area requires placement in an improved storage facility that is located outside of the AOC or on-site area.

2) RCRA Land Storage Prohibition regulation (40 CFR 268.50). This waiver is necessary because a restricted hazardous waste may require storage for longer than one year.

Section 6 discusses the management support activities for the overall FEMP soil and debris management strategy. Section 7 provides a sampling and analysis plan that will be used to guide analysis that is required to supplement the contaminant determination. Section 8 provides a list of references that were used during the preparation of the soil and debris work plan.

1.3 Definitions

The following subsections provide the regulatory definitions for soil and debris and identify the specific contamination types that may be present within soil and debris.

Soil

The United States Environmental Protection Agency (US EPA) proposed to redefine soil (in revised 40 CFR Part 268 [55 FR 55172]) as unconsolidated earth material composing the surficial geologic strata, consisting of clay, silt, sand, or gravel size particles (sizes as classified by the US Soil Conservation Service). Soil will also include a mixture of the above-mentioned materials with other liquids, sludges, or solids that are inseparable by simple mechanical removal processes. At the FEMP, soil is defined in the FEMP entitled "Controlling the Generation of Construction/Maintenance Waste" (SSOP-0044I WEMCO, 1991e) as dirt or gravel particles with maximum dimensions of 2 inches. In general, soil requiring management at the FEMP will result from excavation activities.

Debris

The US EPA proposed to redefine debris (in revised 40 CFR Parts 148, 260, 261, and other regulatory changes [57 FR 983]) as solid materials that have been manufactured or processed (excluding treatment residuals). Debris also includes natural geologic material that exceeds a 9.5 mm sieve size such as gravel, cobbles, and boulders, or is an inseparable mixture of such materials with soil, liquid, sludge, or other solid waste materials. The US EPA also classifies plant or animal matter as debris. At the FEMP, debris is defined by SSOP-0044I as materials such as concrete block, stone, asphalt paving, and similar material that cannot be reused and varies in size from broken fragments of masonry or stone to large structures like tank pads or walls that are scheduled for demolition. Debris at the FEMP will primarily consist of process equipment and scrap building materials that will be generated during decontamination and decommissioning (D&D) activities.

The determination of matrix types is based on the factors of physical characteristics, treatability, recyclability, as well as regulatory requirements. With respect to these factors, debris materials are further categorized into:

1) Concrete and construction rubble
2) Structural steel
3) Non-ferrous metals
4) Process equipment
5) Glass
6) Wood
7) Paper and cloth
8) Rubber and plastic
9) Ferrous metal that is not recoverable

Structural steel, nonferrous metals (i.e., scrap copper), and process equipment are identified as specific categories of debris that may be decontaminated and recycled (recoverable). Glass, wood, paper and cloth, rubber and plastic, and ferrous metals that are not recoverable will be managed similarly to concrete and construction rubble which are not easily decontaminated (non-recoverable). These materials will be sent off site for disposal or stored in an improved storage facility.

CERCLA hazardous substances are any substances designated pursuant to Section 311 (b)(2)(A) of the Federal Water Pollution Control Act; any substances having characteristics identified in Section 3001 of the Solid Waste Disposal Act; any toxic pollutants listed under Section 307(a) of the Federal Water Pollution Control Act; any hazardous air pollutants listed under Section 112 of the Clean Air Act; any imminently hazardous chemical substances or mixtures with respect to which the Administrator has taken action pursuant to Section 7 of the Toxic Substances Control Act; and any element, compound, mixture, solution or substance designated pursuant to Section 102 of CERCLA.

Hazardous wastes are those wastes that are designated hazardous by the Resource Conservation and Recovery Act. Hazardous waste is defined by 40 CFR 261 as substances that are specifically listed by the US EPA (40 CFR 261, Subpart D) in addition to wastes and/or waste mixtures that exhibit the characteristics of ignitability, corrosivity, reactivity, or toxicity, as specified in 40 CFR 261, Subpart C. Soil and debris contaminated with hazardous waste are not expected to be a major material stream.

Radioactive waste, as defined by DOE Order 5820.2A, is a solid, liquid, or gaseous material that contains radionuclides regulated under the Atomic Energy Act (AEA) and is of negligible economic value considering recovery costs. Low-level radioactive waste contains radioactivity but is not classified as high-level waste, transuranic waste, spent nuclear fuel, or a byproduct material. Radioactively contaminated soil and debris are expected to be the largest streams of material.

Materials at the FEMP have the potential to contain both hazardous and radioactive contamination, a combination termed mixed waste. **Mixed waste** is defined by DOE Order 5820.2A as waste containing both radioactive and hazardous components as defined by the AEA and RCRA, respectively. Mixed waste is regulated pursuant to RCRA and is anticipated to be a very small component of the material stream. It is likely that most hazardous waste at the FEMP will also be mixed waste.

Underground Storage Tank (UST) waste is petroleum-contaminated soil and debris that are generated as a result of the closure and remediation of underground petroleum storage tanks in accordance with Ohio Administrative Code (OAC), Chapter 1301:7, as promulgated by the Ohio State Fire Marshall. The closure of underground storage tanks has been managed in accordance with this regulation since the closure of underground petroleum storage tanks is exempt from CERCLA regulation. However, soil and debris resulting from the UST closures may be radioactively contaminated and will be included within this soil and debris management program as radioactive material.

Asbestos-contaminated debris contains friable asbestos that is regulated by the Ohio EPA pursuant to OAC, Chapter 3745-20. Construction (decommissioning) and maintenance activities will generate asbestos-contaminated debris. Debris is considered to be contaminated if the asbestos concentration is greater than 1 percent (by volume). This material may also be contaminated with radiological or hazardous constituents. Asbestos-contaminated debris will be managed in accordance with the OAC requirements. The materials may be stored in improved storage facilities until they can be disposed. Asbestos-contaminated debris are expected to comprise a small portion of the material stream.

Polychlorinated-biphenyl (PCB)-contaminated soil and debris are materials that contain PCB contaminants at concentrations that exceed 50 parts per million. It is possible that soil and debris will be contaminated with PCBs. The primary sources of PCBs are electrical transformers and hydraulic fluids. PCBs are regulated by 40 CFR 761.60. The cleanup of PCB-contaminated soils at the FEMP is regulated by 40 CFR 761.25(c)(3)(v). PCB-contaminated soil and debris will be managed according to FEMP procedures that comply with this regulation. The materials will be stored in improved storage facilities until they can be disposed or treated/remediated. Very small quantities of PCB-contaminated material are expected.

SECTION 2

BACKGROUND AND JUSTIFICATION

2.1 Summary of Potential Threat and Project Justification

Contaminated soil and debris are generated at the site during removal actions, environmental response actions, construction projects, and maintenance activities. Soil and debris are currently accumulated on site in open piles. The final disposition of these waste materials will be determined through the CERCLA process. These open piles are exposed to the weather, which could potentially result in the release of contaminants to the environment via airborne and surface water/groundwater pathways. An RSE (Attachment 1) indicated that contaminant migration from the soil and debris piles could have an adverse impact on human health and the environment. The improved storage of soil and debris was incorporated into Section IX of the 1991 Amended Consent Agreement as Removal Action Number 17.

2.2 Removal Action Scope

The scope of this removal action is divided into two phases. Phase I addresses the management of soil and debris during the time period when the improved storage facilities are being designed and constructed. Phase II extends from the construction of the improved storage facilities until the final remedial alternatives are selected and implemented. This work plan addresses the management of both existing and future soil and debris during Phase I and Phase II.

Phase I

During Phase I, controlled stockpiles will be created for soil that has a field correlated total uranium activity concentration of less than or equal to 100 pCi/g, and is not contaminated with nonradiological regulated waste materials. Soil that has a total uranium activity concentration that exceeds 100 pCi/g and is not contaminated with other nonradiological regulated waste substances will be stored temporarily under tarpaulins until the improved storage facilities are constructed. Soil that contains hazardous waste or PCBs at concentrations that exceed the regulatory standards will be containerized and stored in designated storage facilities on-site. Soil piles currently existing on site will be managed according to current site policy during this time period.

The Soil and Rubble Pile on North Third Street will be managed similarly to the other existing piles until the in-place containment structure for it is completed.

Debris will be decontaminated and recycled/re-used if possible. Recoverable contaminated debris will be stored under tarpaulins prior to being decontaminated. Non-recoverable radiologically contaminated

debris will be containerized and shipped for off-site disposal if possible. Non-recoverable debris that can not be shipped off-site (hazardous) will be containerized until the improved storage facilities are constructed. Uncontaminated debris that can not be shipped off-site to an industrial solid waste landfill will be stored in uncovered segregated piles.

Phase II

This phase is essentially similar to Phase I, with the exception that existing piles of soil containing a total uranium concentration greater than 100 pCi/g or nonradiological regulated waste materials will be consolidated and placed into the Central Storage Facility. The Soil and Rubble Pile on North Third Street, which has been determined to remain in place, will have an in-place containment structure built over it. Contaminated debris will be placed in the Scrap Metal Pad structure, the Decontamination Facility Pad structure, as well as the Central Storage Facility.

2.3 Sources and Quantification of Soil and Debris

This section identifies the soil and debris materials that will be temporarily stored in an improved storage facility or sent to a controlled stockpile area. In addition, future sources and estimated quantities of soil and debris are identified to the extent possible.

Existing Sources of Soil and Debris

There are and will be many removal actions and other activities on site that will generate soil and debris requiring storage in containment structures or in-place containment structures. Current activities have produced approximately 20 on-site soil piles that will require additional handling and storage. The existing piles are listed in Attachment 3. The existing piles may be contaminated with petroleum products, PCBs, hazardous waste, radioactive waste, or mixed wastes.

Identifying Future Sources of Soil and Debris

Attachment 3 lists the anticipated future sources of soil and debris that are expected to require placement into improved storage. A contaminant assessment will determine whether the material requires storage in a containment or an in-place containment structure as opposed to storage in a controlled stockpile or off-site disposal. Although is it difficult to identify all the future soil and debris sources, the information presented is an estimate of the volume of storage that may be needed for planning purposes. The generation schedule for these activities will also be important because additional containment structures or in-place containment structures may be needed. It should be noted that future-generated materials not identified in Attachment 3 will be managed according to this plan.

SECTION 3

SOIL AND DEBRIS MANAGEMENT PLAN

Soil and debris have been generated at the FEMP as a result of construction projects and removal actions, as well as routine maintenance activities. Additional soil and debris will be generated during the future, as a result of these same activities. Soil and debris are currently stored in piles or containers; the primary method is outdoor piles. This section presents a soil and debris management plan that has been developed to ensure that accumulated soil and debris are properly managed to protect the public, employees, and the environment. The plan provides a sitewide management concept and implementation strategy for improved storage and management of soil and debris during the previously defined Phase I and Phase II periods.

The basic strategy of this management plan is to provide covered storage facilities for excess soil and debris which requires storage on site. This plan will identify and segregate the various soil and debris into categories which are based upon regulatory considerations and the anticipated means of treatment and/or disposal that will be identified in the Records of Decision. Soil and debris will also be segregated to ensure that incompatible materials are not mixed together.

The temporary storage capacity for each specific type of soil and debris is dependent upon the contaminants encountered and the required storage duration. Since these factors are subject to change, this plan and the storage facility design will provide operational flexibility. The flexibility of the storage structures is described in Section 4.

Elements which are common to both the soil and debris management plans include waste minimization policies and waste classification procedures. Some of the global FEMP policies and components related to waste generation, minimization, and management are summarized in Subsection 3.1. Subsection 3.2 identifies and discusses the function of the four proposed improved storage facilities. The procedures for assessing soil and debris to determine the classification of the material and associated management/storage requirements are described in Subsection 3.3. Subsections 3.4 and 3.5 address the management of soils. Subsections 3.6 and 3.7 address debris management. Subsection 3.8 describes post-storage activities. This management plan will form the basis for developing detailed new FEMP soil and debris management procedures.

3.1 Waste Minimization and Management Strategies

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The following subsections describe the strategies developed for the minimization and management of waste. Subsection 3.1.1 proposes the AOC concept for the FEMP. This subsection describes how the FEMP will be divided into three AOCs for the management of soil and debris generated within these

AOCs. Selection of the field-correlated 100 pCi/g total uranium activity concentration to determine whether soil and debris requires improved storage is discussed in Subsection 3.1.2.

3.1.1 Areas of Contamination and Waivers

An area of contamination (AOC) is defined as an area consisting of contiguous contamination of varying amounts and types at a CERCLA site for which movement of contaminated soil and debris does not constitute placement. The AOC concept is presented in the US EPA Superfund LDR guides and in the National Contingency Plan preamble (55 FR 8758, 8760). The AOC concept at the FEMP for compliance with LDR regulations applies at this time to only soil and debris management. The proposed AOCs may be modified as a result of the various Records of Decision.

The FEMP will implement the AOC concept in conjunction with the ARAR waivers in order to control and manage the movement of soil and debris throughout the site. The ARAR waivers (Section 5) will be necessary to permit placement of restricted hazardous waste, if any, from an AOC to improved storage facilities not located within the AOC. Also, regulatory relief for Land Disposal and Storage Restrictions is provided through this combination AOC/waiver concept. The following benefits will be obtained by the implementation of this concept:

1) Management of soil and debris within the AOC promotes waste minimization by allowing for the utilization of site soil as backfill within the AOC instead of using uncontaminated soil from off-site.

2) Source control will be achieved by providing engineered structures for controlled storage of contaminated materials.

3) The AOC/ARAR waiver will aid in the standardization of soil and debris management practices on-site.

The FEMP AOC concept consists of three AOCs (as presented in Figure 3-1). Also, FEMP areas outside of the three AOCs are addressed herein. The AOC concept will be utilized at the FEMP to provide flexibility in the management of soil and debris.

The rationale for delineating AOCs at the FEMP consisted of the following:

1) An AOC is delineated by the areal extent of contiguous contamination.
2) An AOC is expected to have similar soil and debris remedial action alternatives.
3) An AOC contains similar waste management unit types.

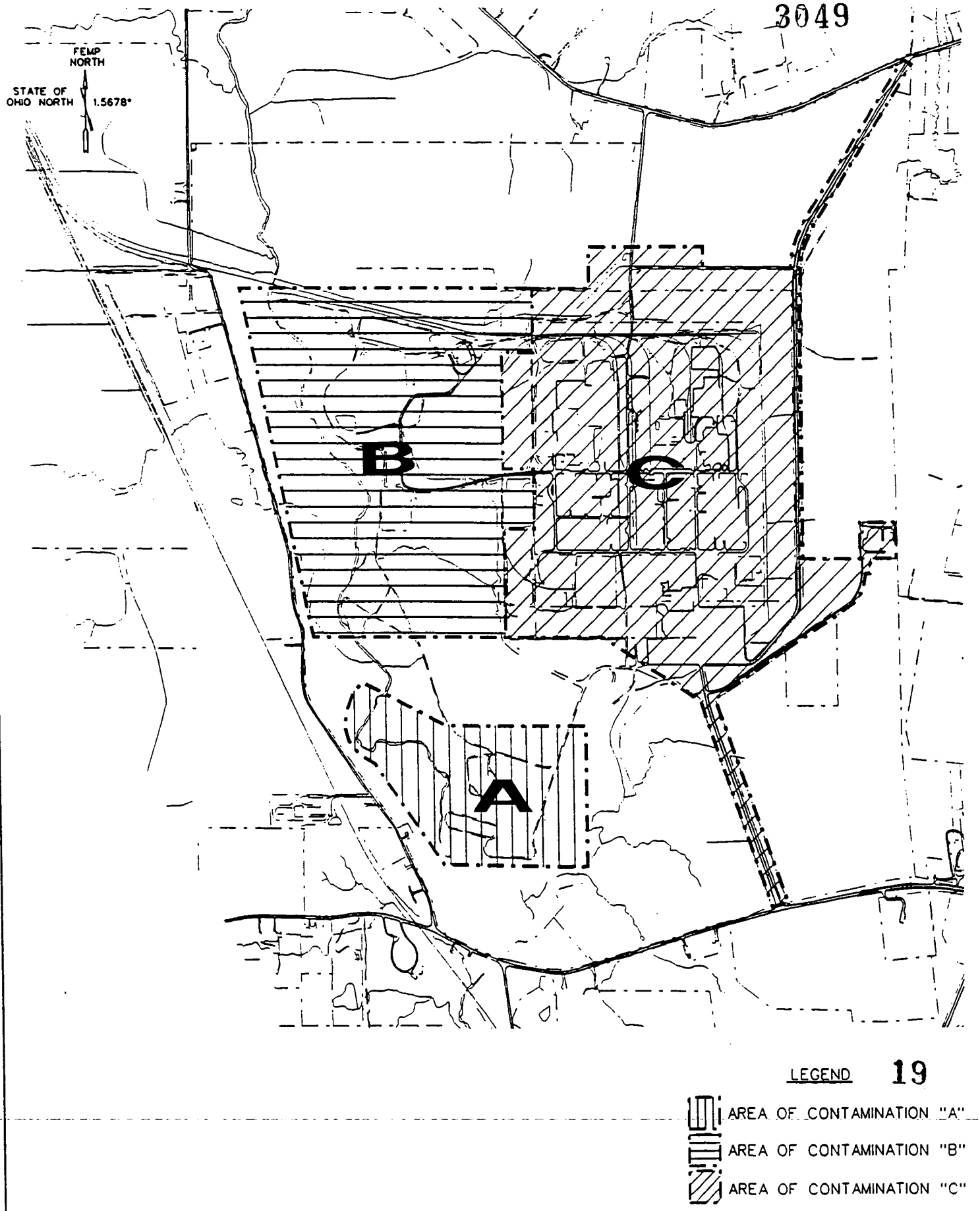

FIGURE 3-1
FEMP AREAS OF CONTAMINATION

AOC A

This AOC incorporates the southfield and areas contiguous to the active and inactive fly ash piles. The hazardous substances within this AOC have originated from similar sources (primarily heavy metals), thus soil and debris management and remediation will be uniform throughout.

AOC B

This AOC incorporates areas contiguous to the waste pits, landfill, lime sludge ponds, Biodenitrification sludge lagoons, and silos. These units were used to store residue from production processes and associated activities.

AOC C

This AOC includes the former production and process area including buildings, the access roads, and the former fire training area. The manufacturing processes within the production area resulted in contiguous contamination (VOCs and metals) throughout the AOC. The debris materials will be similar throughout the AOC because construction materials and practices were similar. The transite used in the construction of many buildings may require a specific remediation procedure.

Other FEMP Areas

The areas not contained within any of the three identified AOCs are not continuously and contiguously contaminated. These areas are largely undeveloped and current Remedial Investigation/Feasibility Study (RI/FS) data does not justify the establishment of additional AOCs.

If a total uranium contamination greater than 100 pCi/g or any other CERCLA hazardous substance is found within the FEMP boundaries, outside of the three AOCs, then the FEMP will manage the soil as follows:

1) Establishment of a new AOC or extension of an existing AOC.
2) Remove the contaminated soil and manage it in accordance with the provisions of this work plan.

Construction operations within the area outside the three AOCs will be conducted in accordance with the same procedures that will be developed for implementing this work plan.

This plan does not address contaminated soil and debris which is located outside of the FEMP property. This contaminated material will be handled on a case by case basis. Any material brought onto the FEMP will be handled in accordance with the provisions of this work plan.

3.1.2 Activity Concentration for Storage Determination

The plan proposes a sitewide activity concentration for total uranium in soils (at the natural isotopic distribution) that can be easily detected in the field. A 100 pCi/g field-correlated activity concentration for total uranium will be used to determine the storage disposition requirements for soil. The correlation can be adjusted for the natural or depleted isotopic distribution of uranium. This guideline is not intended to be used as a final clean-up standard; instead, it is intended to provide a guideline for determining the level of management and the type of storage facility required. The 100 pCi/g activity concentration will be used to separate soil into two major categories: (1) contaminated materials for placement into improved storage facilities or (2) material for placement in a controlled stockpile. Past construction projects and RI/FS field experience have demonstrated that hand-held radiological detection instrumentation can be correlated to the 100 pCi/g activity concentration for total uranium. The correlation is approximate due primarily to the mix of radionuclides, detector efficiencies, and detection geometries. Excavation surveys will be conducted with real-time radiological measurements. Hand-held radiological instrumentation will be employed to direct the excavation process and to determine when soils exceed the 100 pCi/g activity concentration threshold. A radiological survey will be performed on a study area employing a NaI detector and the protocols defined in the Quality Assurance Project Plan (QAPjP) (WEMCO 1992b).

Debris will be decontaminated for free-release in accordance with 40 CFR 192, NRC Regulatory Guide 1.86, and DOE Order 5400.5 whenever possible. The FEMP will establish stockpiles for clean debris that may be shipped off site for disposal in an industrial solid waste landfill. Recoverable debris will be stored in improved storage facilities prior to being decontaminated. Nonrecoverable debris that cannot be decontaminated may be stored in improved storage facilities prior to being packaged and shipped to a LLW disposal facility.

3.2 Improved Storage Facilities for Soil and Debris Management

This subsection describes the four improved storage facilities that will be constructed for Phase II. Currently, the structures are all located in AOC C. This AOC has the highest potential for generating soil and debris during removal actions. The FEMP proposes to relocate contaminated soil and debris from other AOCs to the improved storage facilities in AOC C as required for protection of human health and the environment. Soil and debris that will be moved to the Central Storage Facility (CSF) structure in AOC C will be above 100 pCi/g and/or contaminated with other nonradiological regulated waste materials. Section 5 identifies the need for a CERCLA ARAR waiver to allow the FEMP to place soil and debris from one AOC into an improved storage facility in another AOC. It should be noted that additional improved storage facilities may be added as required in the future to support removal actions and other FEMP activities. The following paragraphs introduce and describe the proposed improved storage facilities. Table 3-1 summarizes the disposition alternatives for soil and debris at the FEMP.

Central Storage Facility (CSF)

The CSF will be a containment structure that will store contaminated soil and non-recoverable debris generated from various areas throughout the FEMP. Materials will be segregated in the containment structure based on the type of contamination (i.e., asbestos, petroleum, PCB, hazardous, and radioactive). Material will remain in the CSF until it can be decontaminated, treated, or packaged for final disposal.

Decontamination Facility Pad (DFP)

This containment structure will be located near the new decontamination facility. The DFP will store contaminated recoverable metal, materials, and equipment until they can be decontaminated.

Scrap Metal Pad (SMP) Cover

This containment structure will be built over the existing location of the Scrap Metal Pile. The contaminated metal will be stored here until it can be sent for decontamination or shipped off site for disposal.

Soil and Rubble Pile Cover (SRPC)

This in-place containment structure will be built over the existing soil and rubble pile that is located in the northwest corner of the production area on North Third Street. The contaminated material will remain in this in-place containment structure until it can be decontaminated, treated, or packaged for final disposal.

3.2.1 Material Segregation Justification

Soil and debris will be segregated based on the contaminant assessment. For example, the radioactive non-hazardous soil and debris will be segregated from the hazardous or mixed materials. Therefore, the hazardous materials will not be diluted by radioactive non-hazardous materials. In addition, segregation is a sound technical strategy because the final remedial alternative for treatment/disposal may be different for radioactive and hazardous wastes. It may prove to be technically or economically feasible to treat/dispose of these soil and debris categories separately. For example, shipment of low-level radioactive debris to an off-site disposal facility may be a feasible alternative. However, these facilities generally do not accept hazardous materials.

Table 3-1 - Detailed Summary of Disposition Alternatives

Alternative	Description
Free-Release	Allows for the free-release of debris which have been determined to be nonhazardous, do not originate from a hazardous waste management unit, and are below the radiological limits specified in DOE Order 5400.5. This material may be disposed of in a permitted sanitary landfill if recycling is not feasible.
Controlled Stockpile	Provides for the bulk storage of the material determined to be nonhazardous and below the field-correlated 100 pCi/g activity concentration for total uranium. This bulk storage area is the designated controlled stockpile. Seeding and runoff controls will be provided for this area.
Central Storage Facility or Future Facilities (as required)	Provides for the bulk storage of the material in accordance with the standards of a permitted facility, and identified ARARs as discussed herein. The material will be stored pending final treatment/disposal pursuant to the selected CERCLA remedial alternative.
Improved Storage Facilities (Scrap Metal Pad, Soil and Rubble Pile Cover, and Decontamination Facility Pad) or Facilities	Provides for the bulk storage of the material in accordance with the standards of a permitted facility (and all other applicable requirements as discussed herein) prior to being decontaminated. If the material is successfully decontaminated, the material may be free-released for recycling or reuse. If the material cannot be decontaminated, the material will be packaged and shipped to an off-site LLW disposal facility in accordance with their acceptance criteria and all required regulations. This action is intended to accommodate existing recycling and excess programs and to allow for the reuse or recycling of materials to the greatest extent possible. This approach is consistent with the idea of waste minimization.
Off-Site Disposal	Material that meets the waste acceptance criteria for off-site treatment/disposal facilities will be packaged and transported in accordance with FEMP Procedures, DOT requirements, and the acceptance criteria of the receiving facility.

On the other hand, soils and debris that have similar hazardous constituents will be stored together. Combining these wastes is technically justifiable because the selected treatment/disposal alternative is likely to be the same for these waste streams. This practice will not violate the dilution prohibition because the combination of these materials is not a substitute for adequate treatment. Storage will be an interim measure until the final remedial treatment/disposal alternative is selected and implemented. It should be noted that organic hazardous material may be segregated from inorganic hazardous material because these materials may use different treatment technologies for remediation.

Mixed waste soil and debris will be segregated within improved storage facilities.

Asbestos-contaminated debris will be managed according to the FEMP asbestos management procedures and may be stored and segregated from the other materials because asbestos materials will have specific treatment and disposal requirements.

Petroleum-contaminated materials will be segregated from the hazardous soil and debris so that it will not have to be treated/disposed as hazardous material during remediation. The UST material will have different treatment/disposal requirements than the radioactive contaminated soil and debris.

PCB-contaminated soil and debris will be managed in accordance with 40 CFR 761.25 and will be segregated from the other categories because they have specific containerization, treatment, and disposal requirements from any of the other materials.

It is likely that additional segregation will occur based on the anticipated method of treatment/disposal/recycling. Soil and debris that have more than one type of contaminant will be handled according to the most restrictive regulation. For example, asbestos and PCB materials that are also hazardous will be containerized and segregated rather than put into the hazardous pile. Soil will be segregated from debris for a specific contaminant category because the materials are likely to be handled differently. Debris material will be segregated based on whether they can be decontaminated and recycled.

3.3 Contaminant Determination

The management and segregation of soil and debris is dependent upon the proper assessment of the waste materials and contaminants contained within the materials. An assessment of contamination will be performed prior to initiating work activities. This subsection addresses the approach which will be utilized to determine the appropriate management and segregation requirements. Whenever possible, existing analytical information (Remedial Investigation characterization results, RCRA waste determinations, and environmental monitoring results), historical facility information, and/or process knowledge will be utilized to complete the assessment. Physical sampling and analysis will be performed, as necessary, to obtain the information needed to complete the contamination assessment. The

contaminant assessment will provide the information that is required for completing the FEMP Material Evaluation Form (SSOP-0002). Attachment 4 provides an informational copy of the procedure.

The RI/FS characterization and RCRA waste determination programs have established a characterization database for some soil and debris. This analytical data will be used to the extent practicable to determine the contaminants and to assess if the concentrations exceed specific regulatory limits (i.e., RCRA and PCBs). This information will be particularly useful for soil.

Facility historical data (including photographs) and process knowledge will also be used to determine the contaminants. Historical data includes documented spills and releases, and past sample results (including discharge effluent and environmental monitoring samples). Process knowledge includes the types of raw materials utilized, operation and waste management procedures, and construction materials. This information will be particularly useful for debris.

Physical samples and/or field measurements will be used to characterize materials when sufficient information is not available from the other data sources. Chapter 7 provides a sampling and analysis plan that will be used as the guide for obtaining additional characterization information. However, specific sampling and analysis plans will be developed on a case-by-case basis for specific projects that require analytical activities. In addition, hand-held field instruments will be used to perform radiological surveys and chemical vapor screening prior to and during soil and debris removal operations. For example, a radiation detector will be used to assess radiological contamination, and a photoionization detector (i.e., an HNu) or a flame ionization detector (i.e., organic vapor analyzer) will be used to detect the presence of organic constituents. The analytical results from the field instruments will also be used to confirm historical and process information. The information gained through the contaminant assessment will be incorporated into the sitewide database for the post-remediation risk assessment (see Section 6.3.2).

Process knowledge and additional analysis (if required) may be utilized to determine if a material is hazardous. At a minimum, all physical samples will be collected and analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) to facilitate a hazardous waste determination according to the FEMP Material Evaluation Form (SSOP-0002 that is included as Attachment 4). The procedure will be followed for specifying the proper management requirements. This hazardous waste determination procedure could be significantly revised in the near future. The nature of these revisions depend upon the outcome of several key regulatory changes which are currently being considered by the US EPA. These changes include potential revisions to the "derived from rule" (40 CFR 261.3(c)(2)), the "mixture rule," (40 CFR 261.3(a)(2)), and the proposed LDR rules for soil and debris (56 FR 55161 (contaminated soil), and 57 FR 958 (contaminated soil), and 57 FR 7638 [mixture and derived from rule]). The proposed mixture and derived from rule change could include deminimis (below regulatory concern) levels of RCRA waste. The FEMP will revise the procedure for the hazardous waste determination process if the regulatory requirements change.

3.4 Soil Management Plan

This subsection describes the management for FEMP soils. This subsection provides an overview of the management plan and identifies specific management procedures to allow proper segregation of each type of soil expected to be encountered at the FEMP.

3.4.1 Soil Management Plan Overview

The basic approach for the management of soil at the FEMP is to provide controlled bulk storage of contaminated soils that remain as surplus at the completion of various site activities. Phase I of this management plan requires placement on and covering of contaminated soils with a heavy, nonpermeable tarpaulin. It is intended to improve this current management practice by constructing a containment structure, known as the CSF, for soils which contain a waste material other than radioactive constituents (i.e., hazardous waste, mixed waste, petroleum contaminants, or PCBs). In addition to the CSF, controlled stockpile areas will be provided for the storage of soils which have a field-correlated total uranium activity that is less than or equal to 100 pCi/g, and does not contain concentrations of other nonradiological regulated waste materials that exceed regulatory limits.

The CSF will improve the management of soil by centralizing the storage operations and maintenance activities. Normal practice will be to store the soil within the CSF in bulk to minimize the material handling required to support the final remediation efforts. However, some of this waste may be containerized to isolate or segregate a specific quantity of soil.

Phases I and II include the establishment of controlled stockpiles. Controlled stockpiles will be outdoor piles for the bulk storage of excess soils resulting from various removal actions, construction projects, and maintenance, closure and environmental response activities. Controlled stockpiles will be limited to soils that contain less than or equal to 100 pCi/g of total uranium and no other nonradiological regulated waste materials at concentrations that exceed regulatory limits. Each stockpile area will have runon and runoff controls; runoff will be retained and managed in accordance with established FEMP stormwater controls. The exposed pile will also be provided with erosion control such as seeding, silt fencing, hay bales, or polymeric binding agents.

During Phase I, existing soil piles may be consolidated, moved to a controlled stockpile area or containerized to reduce the number of piles which exist. After construction of the CSF is completed, it is intended to relocate the smaller contaminated soil piles to the CSF (Phase II). However, it is not practical to relocate the larger consolidated soil piles, such as the North Third Street Soil and Rubble Pile. To improve the storage of this pile, an in-place containment structure will be erected over the pile. Additional in-place containment structures may be erected over other existing soil piles based on a comparison of the cost of relocation versus the cost of erecting the in-place containment structure. The

tarpaulin covers over the consolidated soil piles will be maintained prior to completion of the in-place containment structures. Tarpaulin covers or other controls (e.g., polymeric spray coatings, seeding) will only be allowed for the temporary staging of material in the future.

In summary, the soil management plan consists of a set of phased management procedures. To facilitate the management of the soil, a centralized storage containment structure, in-place containment structures, and controlled stockpiles will be provided. The disposition of the soil will be dependent upon the type of contaminants contained within the soil. The specific requirements for the various soil types expected to be encountered at the FEMP are presented in Subsections 3.4.2 to 3.4.8. The existing and future soil management requirements are summarized in Table 3-2. Figures 3-2 presents the Soil Management Plan Flow Diagram - Phase I. The Soil Management Plan Flow Diagram - Phase II is presented in Figure 3-3.

3.4.2 Non-Hazardous, Radiological Concentration ≤ 100 pCi/g

The field-correlated activity concentration (based on total uranium) that is established for soil management at the FEMP is 100 pCi/g. The 100 pCi/g total uranium activity concentration has been proposed for similar projects at the FEMP. This activity concentration is justifiable at the FEMP because it is not a free-release level and because of the institutional controls imposed at the FEMP. In addition, there is a relatively short duration of these management requirements. The time frame for the controlled stockpiles is 10 years which is based on the assumption that the Records of Decision for all FEMP Operable Units will be issued during that time.

As discussed in Section 3.1.2, an activity concentration of 100 pCi/g that has been field-correlated for total uranium represents a level of surface radioactivity in soil that can be used to determine the storage disposition. Soil which is statistically less than or equal to this concentration, and does not contain hazardous wastes, PCBs, or petroleum products, at concentrations that exceed regulatory limits, will be returned to the excavation, used as backfill within only that AOC, placed in a controlled stockpile area with drainage controls, or left in place with the installation of improved drainage controls. Field monitoring (Section 3.1.2) using hand-held instruments will be used to determine if the soil can be placed in a controlled stockpile. The field survey and determination of whether the soil exceeds the 100 pCi/g activity concentration will be conducted in accordance with existing FEMP procedure SP-P-35-023 (WEMCO 1992a) entitled "Radiological Contamination Surveys." Laboratory radiological analysis may also be performed (as required) in conjunction with the field surveys. A Student's "t" test (or equivalent statistical procedure) will be used for statistical analysis (if necessary) to determine whether soil activity concentrations are significantly higher than 100 pCi/g. Large quantities of material are expected to be utilized as backfill or stored in the controlled stockpiles.

Table 3-2 - Soil Management Summary

1)	If surplus the soils contain radiological contaminants in concentrations that are less than or equal to 100 pCi/g, they will be stored in a controlled stockpile area. Drainage improvements will be required for these stockpiles.
2)	If radiological contaminant concentrations in surplus soil exceed 100 pCi/g, or the soil contains hazardous waste, PCB, or petroleum constituents, then either (1) place it into a containment structure; (2) erect an in-place containment structure over the soil; or (3) during Phase I, these soils will be stored under tarpaulins or containerized.
3)	If adequate information is not available to make the management determination, then collect and analyze representative samples (as required), and manage the soils based on the analytical results.

Figure 3-2
Soil Management Plan Flow Diagram - Phase I

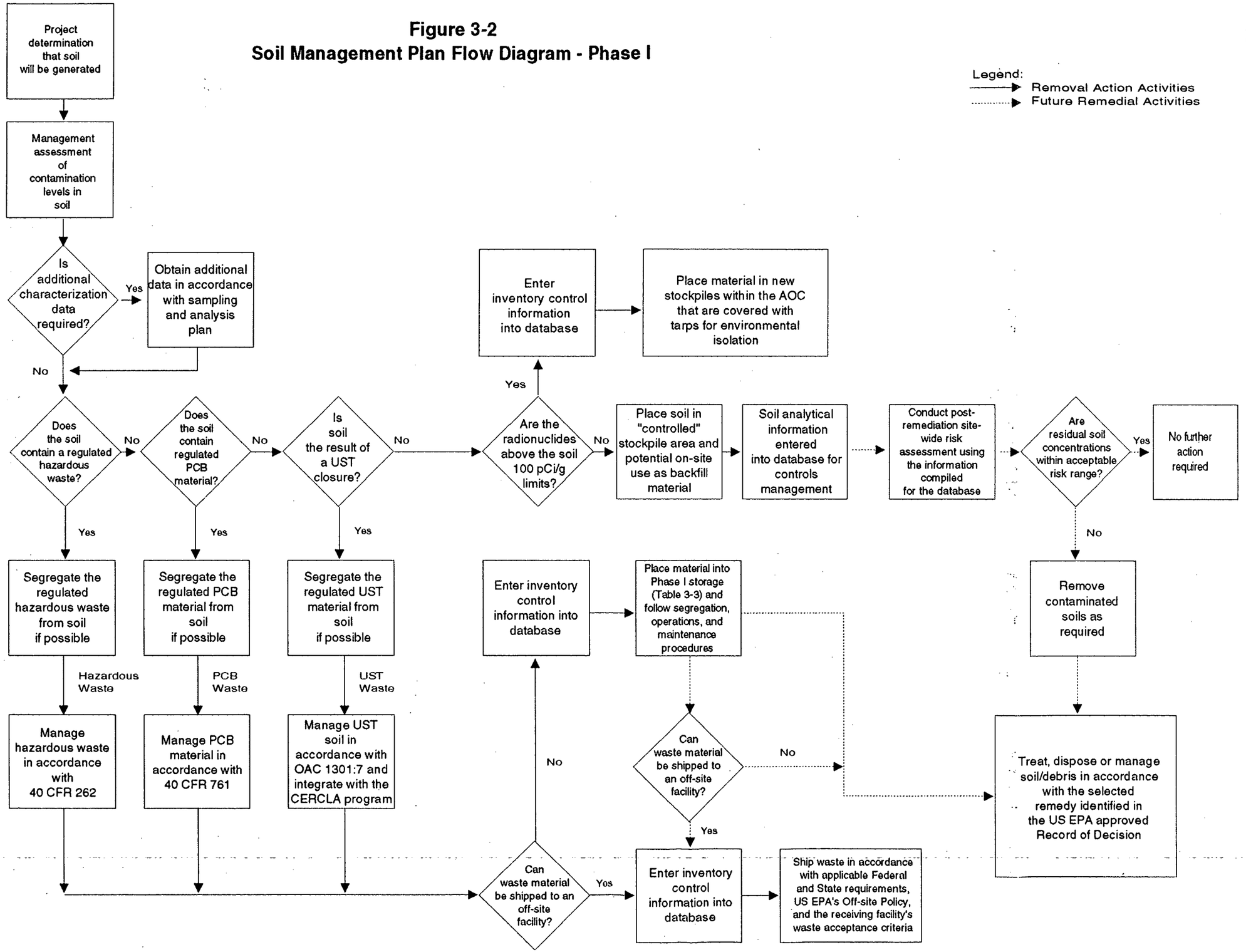

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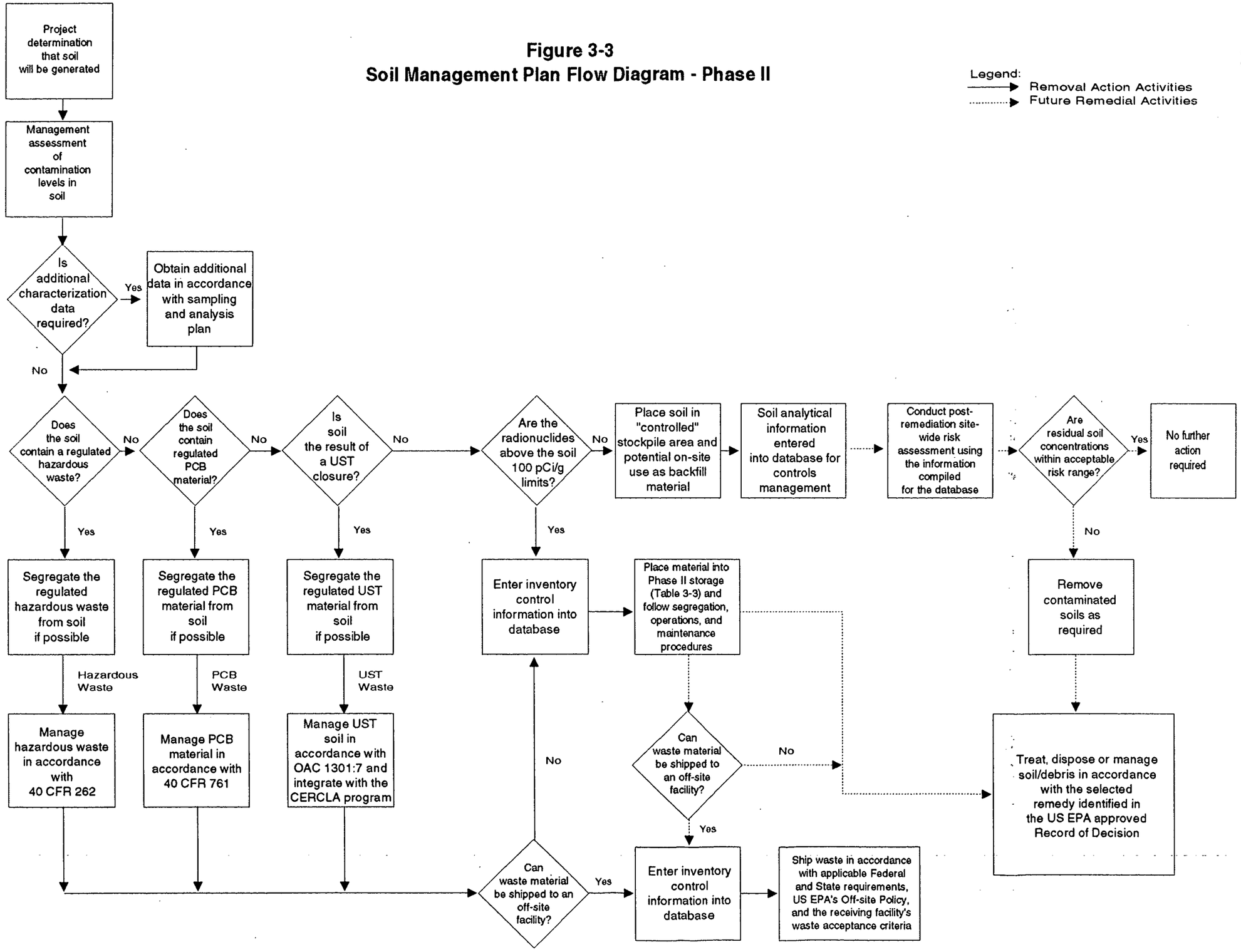
Figure 3-3
Soil Management Plan Flow Diagram - Phase II



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Utilization of the controlled stockpile methodology will commence immediately following the submittal of this work plan. Soil from the controlled stockpile will be utilized as backfill for temporary structures or other projects that will addressed during the final remedial action within the AOC from which it was generated. The FEMP will revise the existing procedure that specifies the requirements associated with utilizing soil from the controlled stockpile as backfill in site excavations.

3.4.3 Non-Hazardous, Radiological Concentration > 100 pCi/g

Radioactively contaminated soil at a concentration that statistically exceeds 100 pCi/g for total uranium will be placed under tarpaulins during Phase I, stored in a segregated pile in the Central Storage Facility during Phase II, or containerized during either of the two phases. Large quantities of this material are expected.

3.4.4 Hazardous and Mixed Waste

During Phase I, soil that is determined to contain hazardous waste or mixed waste generated will be containerized and stored for an interim basis within an existing, approved hazardous and/or mixed waste storage area.

During Phase II, soil in this category will be stored in a segregated pile within the Central Storage Facility (or a containment structure within the AOC) in accordance with RCRA regulations. The Phase II improved storage facilities will not accept materials that are determined to be ignitable, reactive, or incompatible. The FEMP does not expect to generate significant amounts of ignitable, reactive, or incompatible materials. The FEMP will have to designate special storage areas if these materials are generated.

3.4.5 Petroleum-Contaminated Soil

Petroleum-contaminated soil generated prior to the construction of the improved storage facilities will be managed in accordance with current site policy (SSOP-0044I). When the improved storage facilities are operational, petroleum-contaminated soil and soil from a UST project that is radioactively contaminated will be sent to a segregated pile in the Central Storage Facility (or a containment structure within the AOC). These soils were placed in piles pursuant to OAC Chapter 1301:7. The FEMP is investigating sending UST material to an off-site treatment facility.

3.4.6 PCB-Contaminated Soil

During Phase I, PCB-contaminated soil will be containerized and stored for an interim basis within an existing FEMP area that is approved for storage of PCB contaminated material. During Phase II, soil in this category will be containerized in accordance with 40 CFR 761 requirements and stored in the Central Storage Facility (or a containment structure within the AOC). PCB-contaminated soil may also be shipped on site for management during either of the two phases. In addition, PCB-contaminated soil that also contains hazardous waste will be drummed and stored in a segregated area for PCBs. The FEMP anticipates very small volumes of PCB-contaminated soil.

3.4.7 Existing North Third Street Soil and Rubble Pile

The North Third Street Soil and Rubble Pile is the only pile identified at this time that will require an in-place structure for soils. This structure will be known as the Soil and Rubble Pile Cover (SRPC). The pile consists of approximately 75,200 cubic yards of radiologically contaminated soil and debris.

This existing pile will be taken out of service. The pile will be graded and seeded during Phase I to prevent runon from coming in contact with the pile and to prevent the migration of contaminants due to runoff. Runoff will also be managed pursuant to the existing FEMP Production Area stormwater management strategy.

Regrading of the pile may be required for the erection of the SRPC. Current site policy will be observed until the installation of the structure is completed. Additional soil and debris will be prohibited from placement within the SRPC and the pile will remain in place until it is addressed during the final remedial action.

3.5 Specific Soil Management Procedures

This subsection describes the specific Phase I and Phase II management procedures for the types of soil expected to be encountered at the FEMP. The Phase I and Phase II soil management procedures are summarized in Table 3-3. In addition to the summary table, Figures 3-2 and 3-3 provide the flow diagrams for the Phase I and Phase II soil management plans, respectively. It should be noted that Figures 3-2 and 3-3 include activities that are not specifically addressed by this RAWP (i.e., selection and implementation of the final CERCLA remedial measures, and the sitewide post-remediation risk assessment activities). These future activities are included in the figures to indicate how the interim and future soil management plans are integrated into the overall CERCLA remediation effort.

Table 3-3 - Soil Management Plan

CATEGORY (Waste Type or Form)	SOIL MANAGEMENT PROCEDURES	
	Phase I	**Phase II**
Existing North Third Street Soil and Rubble Pile	Regrade and seed the pile. Improve the drainage controls around the pile to minimize runon and to retain runoff for management in accordance with established FEMP Production Area stormwater controls. Install a security fence.	Regrade the pile (if required) and erect an in-place containment structure (designated as the Soil and Rubble Pile structure) over the existing pile. Maintain storage structure until the soils are treated/managed in accordance with the selected CERCLA remedial alternative (OU-5).
Non-hazardous; >100 pCi/g	Cover with tarp. Extend security fence around the pile. Establish drainage controls around the pile to minimize runon and provide runoff controls.	Bulk placement into the CSF, segregate from other waste forms. Maintain storage structure until the soils are treated/managed in accordance with the selected CERCLA remedial alternative. Ship contaminated soil for off-site disposal as required (OU-5).
Non-hazardous; ≤ 100 pCi/g	Establish locations for the new controlled stockpiles (proposed to locate one controlled stockpile in each of the AOCs) and provide runoff controls (may include seeding).	Continue to utilize the controlled stockpiles established as part of the interim procedures. Maintain the controlled stockpile until the soils are treated/managed in accordance with the selected CERCLA remedial alternative (OU-5).

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Table 3-3 - Soil Management Plan (continued)

CATEGORY (Waste Type or Form)	SOIL MANAGEMENT PROCEDURES	
	Phase I	**Phase II**
Hazardous and Mixed Waste	Containerize and store containers in designated hazardous waste storage areas.	Bulk placement into the CSF and segregate from other waste forms. [Note: CERCLA ARAR waiver is necessary to allow the extended bulk storage of soils containing restricted hazardous waste in the CSF. Depending upon the quantity encountered, restricted hazardous waste soils may be containerized and stored within the CSF.] Maintain storage structure until the soils are treated/managed in accordance with the selected CERCLA remedial alternative (OU-5).
Petroleum Contaminated Soils (includes radiological contaminated soils)	Establish a new soil pile specifically for UST soils or combine any new UST soils with the existing soil piles established for UST soils. Install a security fence around the pile.	Bulk placement into the CSF and segregate from other waste forms. Maintain storage structure until the soils are treated/managed in accordance with the selected CERCLA remedial alternative (OU-5).
PCB-contaminated Soil (>50 ppm) [includes radiological contaminated soils]	Containerize and store in designated areas in accordance with 40 CFR 761. PCB contaminated soil will be shipped off-site if adequate treatment/disposal capacity is available.	Same as Phase I soil management procedure. The CSF will be a designated area for containerized PCB contaminated soils. PCB contaminated soil will be shipped off-site if adequate treatment/disposal capacity is available, otherwise the PCB contaminated soils will be stored until a final remedy is selected.

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3.6 Debris Management Plan

This subsection describes the management plan for recoverable and non-recoverable debris at the FEMP. This subsection provides an overview of the debris management plan and identifies specific management procedures for the decontamination, off-site shipping, or storage of debris.

3.6.1 Debris Management Plan Overview

The basic approach for the management of debris at the FEMP during both Phase I and Phase II is to decontaminate recoverable material for recycle or reuse, ship material off site for disposal, or provide controlled bulk storage for materials that are non-recoverable and can not be shipped off site for disposal. This strategy for debris is consistent with the FEMP policies of shipping materials off site for disposal (when possible) and decontaminating and recycling as much material as practicable (waste minimization). Gross surface contamination will be removed in the field during decontamination activities prior to being removed from the site. The existing FEMP procedures for containerizing and shipping non-recoverable debris off site will not be modified by this management plan.

When debris is generated, FEMP waste management personnel will perform the contaminant assessment (Section 3.3) to determine whether the materials can be decontaminated, require storage in an improved storage facility, or can be sent directly off site for disposal. A procedure will be prepared to provide guidance in determining whether debris requires storage in an improved storage facility. Results from the contaminant assessment will be reviewed to determine the characteristics of the materials. It is likely that process and past construction practice knowledge will be used to determine if debris are contaminated. Samples will be taken, if necessary, to determine the appropriate management of debris. Debris may be decontaminated during dismantling. General surveying with hand-held radiation monitors is likely to provide sufficient radiological information. Process knowledge will likely provide sufficient data as to whether hazardous waste, petroleum, asbestos, or PCB contaminants could exist.

Recoverable debris include structural steel, scrap copper, and other materials which can be successfully decontaminated for recycle, reused, or free-release. A new decontamination facility is currently under construction to provide additional capacity to decontaminate recoverable materials and other debris which may be free-released. The construction of this new decontamination facility is outside the scope of this removal action. It is intended that this facility will be operational during Phase I of this management plan. During Phase I, recoverable debris and other debris that will be free-released will be covered with tarpaulins or containerized for staging prior to decontamination. During Phase II, this debris will be staged within the Decontamination Facility Pad.

Non-recoverable debris include items such as concrete, asbestos, hazardous mixed waste, regulated PCB materials, and other construction wastes that cannot be decontaminated. During Phase I and II, it is

intended that non-recoverable debris be containerized and shipped, to the extent possible, at the time of generation. The containerized non-recoverable debris will be managed in accordance with Removal Action 9 and may be temporarily staged at the FEMP until shipping arrangements can be made. During Phase I, a new debris pile will be established for the bulk storage of non-recoverable uncontaminated debris. Contaminated non-recoverable debris will be containerized during Phase I for off-site shipment (if possible). A security fence and drainage controls will be provided for this new non-recoverable debris pile. The use of this debris pile will continue throughout Phase II. In addition, contaminated non-recoverable debris may be stored in bulk in the CSF during Phase II.

In summary, the debris management plan consists of Phase I and Phase II management procedures. The management plan will depend on whether the material is recoverable or non-recoverable. Table 3-4 provides a management summary plan for recoverable debris, and Table 3-5 provides a summary plan for non-recoverable debris. Figure 3-4 provides a debris management diagram for Phase I of this removal action. Figure 3-5 provides a management diagram for debris generated during Phase II.

Table 3-4 Recoverable Debris Management Summary

1)	Recoverable debris (typically metals thicker than 1/4 inch) will be staged prior to being sent to a decontamination facility. During Phase I, staged materials will be covered with tarpaulins or containerized. During Phase II, the Decontamination Facility Pad will be used to stage these materials.
2)	Decontaminated debris will be recycled, reused, or free-released (as determined by 40 CFR 192, NRC Regulatory Guide 1.86, and DOE Order 5400.5).
3)	If decontamination is unsuccessful, the debris will be managed as a non-recoverable debris.

Table 3-5 - Non-Recoverable Debris Management Summary

1)	During Phases I and II, non-recoverable debris will be packaged for off-site disposal to the extent possible. This material may be staged on site in containers or as bulk material.
2)	Non-recoverable uncontaminated debris which cannot be shipped off site will be placed into a newly established debris pile during both Phases I and II. Non-recoverable radiologically contaminated debris will be containerized during Phase I and shipped if possible. During Phase II, this material may be stored in bulk at the CSF.

Figure 3-4
Debris Management Plan Flow Diagram - Phase I

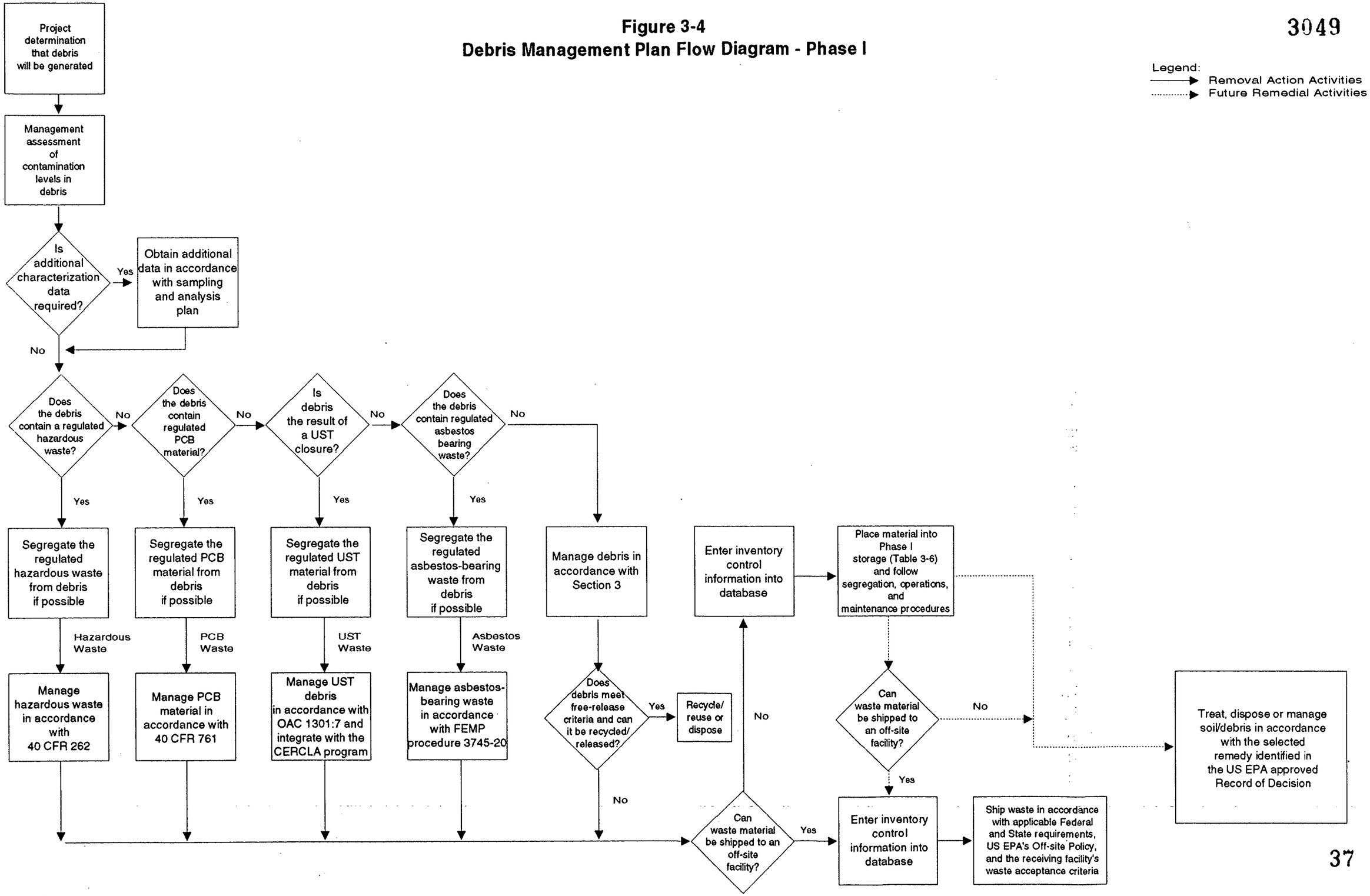

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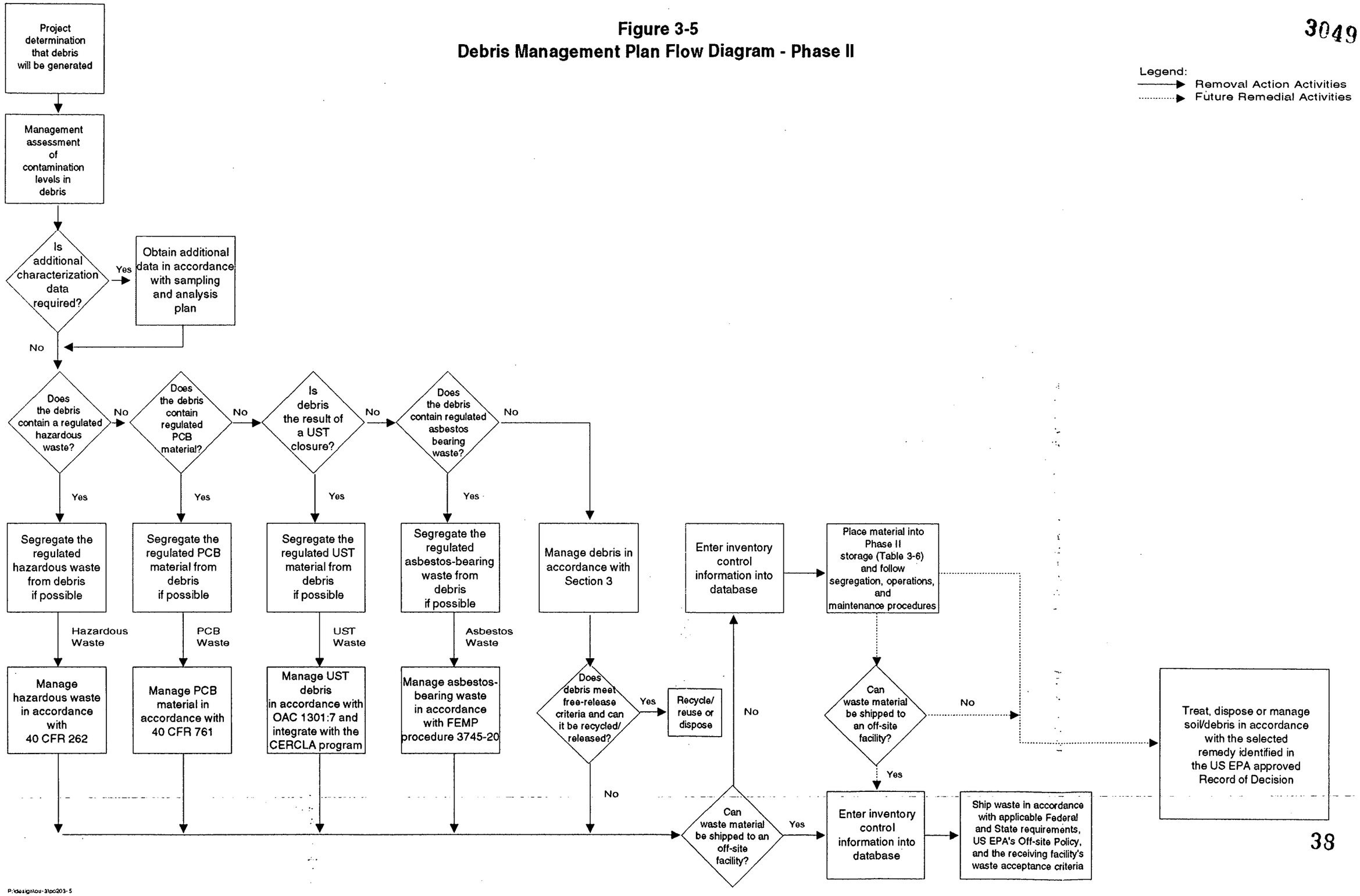
Figure 3-5
Debris Management Plan Flow Diagram - Phase II



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3.6.2 Recoverable Debris Management

Debris which can be decontaminated will be segregated in temporary storage facilities primarily by its recycle/reuse potential to facilitate decontamination during Phase I and Phase II. Recoverable contaminated debris will be stored under tarpaulins during Phase I. Covered storage areas will be provided by Phase II for the segregation and storage of recoverable contaminated debris prior to decontamination, and for the staging of clean materials prior to disposal or off-site shipment for recycle/reuse. These materials will include structural steel, scrap copper, and process equipment. Materials that are successfully decontaminated and determined to be clean, with respect to criteria established by 40 CFR 192, NRC Regulatory Guide 1.86, and DOE Order 5400.5 for radioactivity, and do not contain hazardous wastes, petroleum products, PCBs, or asbestos, will be free-released from the FEMP for recycle/reuse to the extent possible. This is consistent with the FEMP Waste Minimization Policy. Consideration will be given to the economic value of the material with respect to its processing cost. Clean materials that have a low economic value may be free-released from the FEMP and disposed in accordance with Federal, state, and local requirements. Materials which cannot be decontaminated and are specifically regulated waste types will be managed in accordance with this management plan and the ARARs identified in Attachment 2.

Radioactive, hazardous, and petroleum-contaminated recoverable materials will be decontaminated and free-released, if possible. If decontamination is not successful, the materials will be managed according to the specific requirements for non-recoverable debris. Large quantities of recoverable materials are expected to be sent through the decontamination process.

3.6.2.1 Recoverable Radioactively Contaminated Debris

Recoverable materials will be stored under tarpaulins during Phase I. This material will be stored in the decontamination facility pad during Phase II. This material will be decontaminated to facilitate recycling or reuse. The determination of activities and procedures for the decontamination facility are beyond the scope of this work plan.

3.6.2.2 Process Equipment

In general, equipment that is uncontaminated will be free-released for reuse or recycling. Small volumes of these equipment are expected. The free-release criteria for the radiologically contaminated process equipment are defined in 40 CFR 192, NRC Regulatory Guide 1.86, and DOE Order 5400.5. Contaminated process equipment requiring storage during Phase I will be stored under tarpaulins. The materials will be stored during Phase II in a containment structure (Decontamination Facility Pad).

3.6.2.3 Existing Copper Scrap Pile

The existing Copper Scrap Pile is currently being addressed by Removal Action 15. All existing copper scrap that is recoverable will be removed from the pad and decontaminated during Phase I. Non-recoverable material may be disposed off-site in a low-level waste repository without decontamination during Phase I and Phase II. Scrap copper generated during Phase II will be stored in improved storage facilities (if necessary).

3.6.3 Non-Recoverable Debris Management

This discussion specifies the disposition for non-recoverable debris which will primarily consist of concrete/rubble construction debris. Non-recoverable debris also includes glass, wood, paper and cloth, rubber and plastic, and ferrous metal that is not recoverable. Materials that are determined to be uncontaminated with respect to the established criteria specified by 40 CFR 192, NRC Regulatory Guide 1.86, and DOE Order 5400.5 will be free-released for disposal or reuse (if possible). Non-recoverable debris that has been free-released but is not accepted for off-site disposal will be stored in uncovered piles with drainage controls in both Phase I and Phase II. Small quantities of these materials may be generated outside of the process areas.

Off-site disposal will be the primary disposition for non-recoverable debris during Phase I and Phase II. These materials will be packaged and shipped according to the existing FEMP procedures established by Removal Action 9. Non-recoverable debris which cannot be shipped off site will be containerized (contaminated). During Phase II, this material may also be stored in bulk at the CSF.

During Phase II, debris that is contaminated with hazardous wastes, petroleum products, asbestos-bearing material, and PCB-contamination that cannot be decontaminated or shipped off site will require storage in segregated areas of the CSF to comply with the regulatory mandates and to facilitate the anticipated final treatment and/or disposal of these materials. In general, these materials will be segregated and stored in bulk. Small quantities of specific types of materials and potentially incompatible materials, such as asbestos and PCB-contaminated materials, will be containerized in accordance with the specific regulation for these contaminants (OAC Chapter 3745-20 and 40 CFR 761.25 respectively) to facilitate segregation and management.

3.6.3.1 Existing North Third Street Soil and Rubble Pile

Subsection 3.4.7 describes the management of this pile.

3.6.3.2 Existing Scrap Metal Pile

The existing Scrap Metal Pile is currently being addressed by Removal Actions 9 and 15. All existing scrap metal that is recoverable will be removed from the pad and decontaminated. Non-recoverable material may be disposed of off-site in a low-level waste repository without decontamination. A tension-support structure will be erected over the existing location when all the current scrap metal is removed. This facility, known as the Scrap Metal Pad (SMP), will be utilized for the storage of contaminated non-recoverable scrap metal during Phase II until such a time it can be decontaminated and released for disposal.

3.6.3.3 Asbestos Bearing Waste

Asbestos-contaminated, non-recoverable debris, asbestos-contaminated debris that is also hazardous, petroleum, or radiologically contaminated will be containerized and stored in accordance with OAC 3745-20 within a designated on-site storage facility (Phase I). Under Phase II, material in this category will be containerized separately and stored together in an area of the CSF (or a containment structure within the AOC). Otherwise uncontaminated asbestos materials may be shipped to a licensed landfill for asbestos disposal. Small volumes of these materials are anticipated.

3.6.3.4 Regulated PCB Debris

PCB-contaminated debris will be decontaminated and the resulting decontamination process wastes will be managed in accordance with 40 CFR 761. The resulting decontaminated debris will be managed as recoverable or non-recoverable debris (as required). If PCBs cannot be removed through decontamination, then the material will be containerized and stored in designated areas (Phase I). During Phase II, the contaminated debris will be containerized and stored in the CSF (or a containment structure within the AOC).

3.6.3.5 Hazardous and Mixed Waste Debris

Non-recoverable debris that contains hazardous waste or mixed waste will be containerized and stored temporarily in a designated area during Phase I. During Phase II, the material will be stored in a segregated area in the CSF (or an improved storage facility within the AOC) and managed according to the RCRA regulations. Organic-contaminated debris may also be segregated from inorganically contaminated materials. Based on process knowledge, small quantities of these materials are anticipated.

3.6.3.6 Petroleum-Contaminated Debris

Petroleum-contaminated non-recoverable debris and radioactive contaminated UST debris will be stored in a designated storage area during Phase I. Material will be containerized if off-site disposal is possible. This material will be stored in a segregated area in the CSF (or an improved storage facility within the AOC) pursuant to OAC 1301:7 during Phase II. Small amounts of these materials are expected. The FEMP is investigating the potential for shipping these materials off site for treatment.

3.7 Specific Debris Management Procedures

This subsection describes the specific Phase I and Phase II management procedures for the types of debris that will be encountered at the FEMP. The Phase I and Phase II debris disposition requirements are summarized in the Debris Management Plan (Table 3-6). Figures 3-4 and 3-5 provide the flow diagrams for the Phase I and Phase II debris management plans, respectively. It should be noted that the Figures include activities that are not specifically addresses in this RAWP (i.e., selection and implementation of the final CERCLA remedial measures, and the sitewide post-remediation risk assessment activities). These future activities are included in the figures to indicate how the Phase I and Phase II soil management plans are integrated into the overall CERCLA remediation effort.

Table 3-6 - Debris Management Plan

CATEGORY (Waste Type or Form)	Debris Management Procedures	
	Phase I	**Phase II**
Existing North Third Street Soil and Rubble Pile	Regrade the pile, if required, to facilitate seeding. Improve the drainage controls around the pile to control runon and runoff. Install a security fence. Some non-recoverable rubble may be segregated from the pile during regrading operation, and containerized for off-site disposal.	Regrade the pile (if required) and erect an in-place containment structure (designated as the Soil and Rubble Pile structure) over the existing pile. Maintain storage structure until the debris are treated/managed in accordance with the selected CERCLA remedial alternative (OU-5).
Recoverable Materials (All Forms)	Segregate based upon type of material (i.e., copper, steel, usable equipment) and need for decontamination (i.e., hazardous, radiological, PCB, etc.). If debris is non-contaminated (e.g., below free-release levels), the material will be shipped off-site when a suitable buyer or reclaimer of the material is located. If the material is contaminated, the material will be temporarily stored in containers or under tarpaulins until it can be decontaminated. If decontamination is not successful, manage as a non-recoverable debris. [Note: Radiologically contaminated materials and equipment may be shipped to another DOE facility without meeting the free-release requirements.]	Same as the Phase I debris management procedure.
Existing Copper Scrap Pile	To be managed in accordance with Removal Action 15.	None.

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Table 3-6 - Debris Management Plan (continued)

CATEGORY (Waste Type or Form)	Debris Management Procedures	
	Phase I	**Phase II**
Existing Scrap Metal Pile	To be shipped off-site in accordance with Removal Actions 9 and 15.	None.
Non-recoverable (includes building materials such as concrete, structural steel, and walls/siding) [This category is for non-hazardous debris, including radiological contaminated debris]	Decontaminate the surface of the material to remove any gross loose radiological or chemical (includes asbestos removal) contaminants prior to demolition or dismantling efforts. For non-recoverable debris to be shipped off site, follow Removal Action 9 for containerization, interim storage, and off-site disposal shipping requirements. Decontaminated material may be disposed of in a landfill that accepts construction debris. If uncontaminated material cannot be shipped off site, place into the newly established debris pile. Extend the security fence around the new pile and provide runon/runoff controls. Contaminated non-recoverable debris will be containerized and shipped off site (if possible) during Phase I. This debris may be stored in the CSF during Phase II.	Same as the Phase I debris management procedure. These procedures may also be revised if on-site disposal facility is utilized.

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Table 3-6 - Debris Management Plan (continued)

CATEGORY (Waste Type or Form)	Debris Management Procedures	
	Phase I	**Phase II**
Hazardous Waste (includes mixed waste)	Remove hazardous components if possible. Containerize hazardous waste and store containers in designated hazardous waste storage areas. Manage remaining non-hazardous debris as recoverable or non-recoverable scrap as required.	Same as the Phase I debris management procedure. The CSF will be a designated storage area for containerized hazardous waste. Containers will be segregate from other waste forms as required. If the debris is a restricted hazardous waste, the container will be stored in the CSF. [Note: CERCLA wavier requested to allow the extended storage of LDR restricted hazardous waste in the CSF.]
Petroleum Contaminated Debris (includes radiological contaminated debris)	Remove petroleum contaminants if possible. Manage remaining debris as recoverable or non-recoverable scrap as required.	Same as the Phase I debris management procedure.
Asbestos Bearing Waste (includes radiological contaminated debris)	Remove all asbestos bearing waste prior to dismantling efforts, containerize asbestos in accordance with existing FEMP procedures for asbestos removal operations to meet the requirements of OAC 3745-20. Store containers in designated areas, prior to shipment for off-site disposal.	Same as the Phase I debris management procedure. The CSF will be a designated area for containerized asbestos bearing waste.

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Table 3-6 - Debris Management Plan (continued)

CATEGORY (Waste Type or Form)	Debris Management Procedures	
	Phase I	**Phase II**
Regulated PCB Debris (includes radiological contaminated debris)	Remove PCBs and decontaminate the debris for PCBs. Manage PCBs in accordance with 40 CFR 761. Store containerized PCBs in designated areas and manage remaining debris as recoverable or non-recoverable scrap as required. If PCBs cannot be removed or debris cannot be PCB decontaminated, containerize and store PCB debris. Regulated PCB debris or PCBs will be shipped off-site if adequate treatment and/or disposal capacity is available.	Same as the Phase I debris management procedure. The CSF will be a designated area for the storage of containerized PCBs and regulated PCB debris. The regulated PCB debris will be stored until a final remedy is selected.

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3.8 Post-Storage Activities

Improved Storage - Soil and debris placed in an improved storage facility will remain there until treatment/disposal becomes available or until the selected remedial alternative is available. Once treated, the soil and debris will be disposed in compliance with the ROD.

Materials in Controlled Stockpiles - Soil and debris placed in a controlled stockpile may be used for backfill during construction and closure projects. The radionuclide concentrations will be monitored by FEMP personnel and recorded within a computerized database. This monitoring will allow material tracking so that the origin, quantity, and concentration will be traceable to locations where the soil and debris is utilized. All available characterization data will be entered into the database. The computerized database will be used to facilitate the sitewide post-remediation risk assessment. If the residual soil and debris contamination exceeds the acceptable risk range, then the materials will be removed from wherever they have been deposited during remediation and treated as required. If the results of the sitewide post-remediation risk assessment are within acceptable ranges, no further remedial action will be required.

SECTION 4

IMPROVED STORAGE FACILITY DESIGN CONSIDERATIONS

As required by 40 CFR 300.415, an objective of this removal action is to attain compliance with ARARs to the maximum extent practicable considering the exigencies of the situation. In determining whether compliance with an ARAR is practicable, the urgency of the situation and the scope of the removal action were considered. Attachment 2 contains the list of ARARs identified for this removal action. The identified ARARs address the management aspects and establish the design criteria for this removal action. Section 3 addresses the management aspects, and this section addresses the design requirements for the improved storage facilities. If the design of the improved storage facilities will not achieve compliance with an ARAR, 40 CFR 300.415(i) allows waivers to be obtained. The justification for regulatory waivers is presented in Section 5.

In addition to the ARARs, other Federal and State advisories, criteria, or guidance (termed "To-Be-Considered" [TBC]) may be considered in formulating the removal action. The incorporation of any TBC requirement into the design of the improved storage facilities is discretionary to an extent. The TBCs which the DOE has identified are also presented in Attachment 2.

The design concept presented in this section was developed to achieve compliance with the ARARs and TBCs identified in Attachment 2. For each identified ARAR and TBC, the strategy for compliance is provided in Attachment 2. The following subsections provide a more detailed description for the design concept and criteria for the improved storage facilities.

4.1 Identification and Description of Alternatives for Phase II

The following section identifies the potential alternatives for improved storage and provides a brief description of each alternative. It should be noted that a "no-action" alternative is not a potential alternative, because the Consent Agreement between the DOE and the US EPA specifies that the storage of soil and debris must be improved.

Temporary storage facilities will be built to store the contaminated soil and debris that will be generated from various site removal actions, construction, maintenance, and environmental response projects. The potential alternatives that were evaluated to improve storage of existing materials and to provide additional capacity for future materials are discussed in the following subsections. They are as follows:

1) Tarpaulins
2) Tarpaulins with a Liner System
3) Pre-Engineered Buildings
4) Tension-Support Structures

4.1.1 Alternative Number 1 - Tarpaulins

A tarpaulin is a waterproof fabric or material which is laid upon the surface of a pile to contain the material and to control erosion and fugitive dust emissions. Tarpaulins are supplied on rolls and are resistant to sunlight, oxidation, and reaction with the waste before degrading. The functional life of a tarpaulin is about 5 years.

The tarpaulin would be unrolled to cover the inactive surface and slopes of the piles. The active surface of the piles would be uncovered when new material is deposited on the surface. The tarpaulin would then be unrolled to completely cover the pile after accumulation. Concrete blocks will be placed upon the tarpaulins to anchor the cover system in case of high winds.

The contaminated material piles would be regraded and compacted periodically to reduce the peak elevation and the side slope. During the covering/uncovering process, a potentially large area would be needed. In addition, the edges of the tarpaulin would be overlapped and joined each time the tarpaulin is placed over the pile. This type of improved storage would allow flexibility with respect to the size and shape of the piles. The potential for the expansion of storage capacity is limited only by property availability. Earthen berms and drainage ditches will be used to control runon and runoff.

4.1.2 Alternative Number 2 - Tarpaulins with a Liner System

The alternative would utilize the same tarpaulin discussed in Subsection 4.1.1. However, a subsurface liner system that meets the requirements of 40 CFR 264.250 for waste piles would also be provided. The liner system would likely be 12 mil, High-Density Polyethylene Elastomer (HDPE). The liner would need to be chemically resistant to the contaminated materials present in the pile and would require sufficient strength and thickness to prevent failure of the system.

The liner system would consist of a primary and secondary leachate collection/removal system that would collect and remove leachate from the pile. The primary liner would drain leachate that percolated through the pile. The secondary leachate collection system would contain leachate that leaked through the primary liner. This system must be designed and operated to function without clogging. A runoff management system would be required to control at least the volume from a 24-hour, 25-year storm event. Runon from the same storm event must also be prevented. The liner system would make it difficult to expand the size of the facility for additional storage capacity. The liner system would be constructed on the site, where the pile would be deposited and covered with a thin layer of soil to prevent damage during

operations. The soil and debris would be dumped upon the liner system to create the pile. Tarpaulins would be used to cover the soil and debris pile.

4.1.3 Alternative Number 3 - Pre-Engineered Buildings

Pre-engineered buildings are erected with a steel beam and column system covered with a metal roof and siding. These permanent buildings would provide a storage facility for waste piles that would completely control runoff and fugitive dust emissions. Because the building is considered to be permanent, it can be expected to last more than 30 years. As the shape of the existing waste piles is irregular, a certain amount of soil and debris would need to be regraded to form rectangular piles with a moderate peak elevation for structures that would be built around in-place piles. New materials would be moved into a pre-engineered building through a large door. A method of segregating and containing specific types of materials would be required with sufficient aisle space for loading/unloading. Adding extra storage capacity to a pre-engineered building would likely require the construction of another building.

4.1.4 Alternative Number 4 - Tension-Support Structures

Tension-support structures are built with metallic arch frames covered by PVC-coated polyester fabric. A large tension-support structure will require a strip foundation in order to resist wind or tornado loads. These structures can shelter the waste piles and control the runoff erosion and the migration of dust particles. A structure's normal life expectancy is more than 10 years.

The durable fabric is fire retardant and translucent which would maximize the entry of sunlight. The structure can be erected relatively quickly for both existing or future waste piles. The existing waste piles would be reshaped before the rectangular structure could be built to cover them. Large doors would be located at both ends of the structure to facilitate the movement of waste material. A method of segregating and containing specific types of materials would be required with sufficient aisle space for loading/unloading. Tension-support structures could easily be expanded for enhanced storage capacity by erecting an additional length to an end of an existing structure.

There are two types of tension-support structures which are currently in use at the FEMP site. The two types of structures differ with respect to their arches which are typically 10 feet apart. The differences are:

1) Arch trusses wrapped by fabric - The arch trusses are made of galvanized steel tubes. The FEMP has a RUBB® building system of this type.

2) Arch frames tied with fabric - The arch frames are constructed from aluminum I-beams. The FEMP has a SPRUNG® structure of this type.

Both structures would serve the purpose of improved storage.

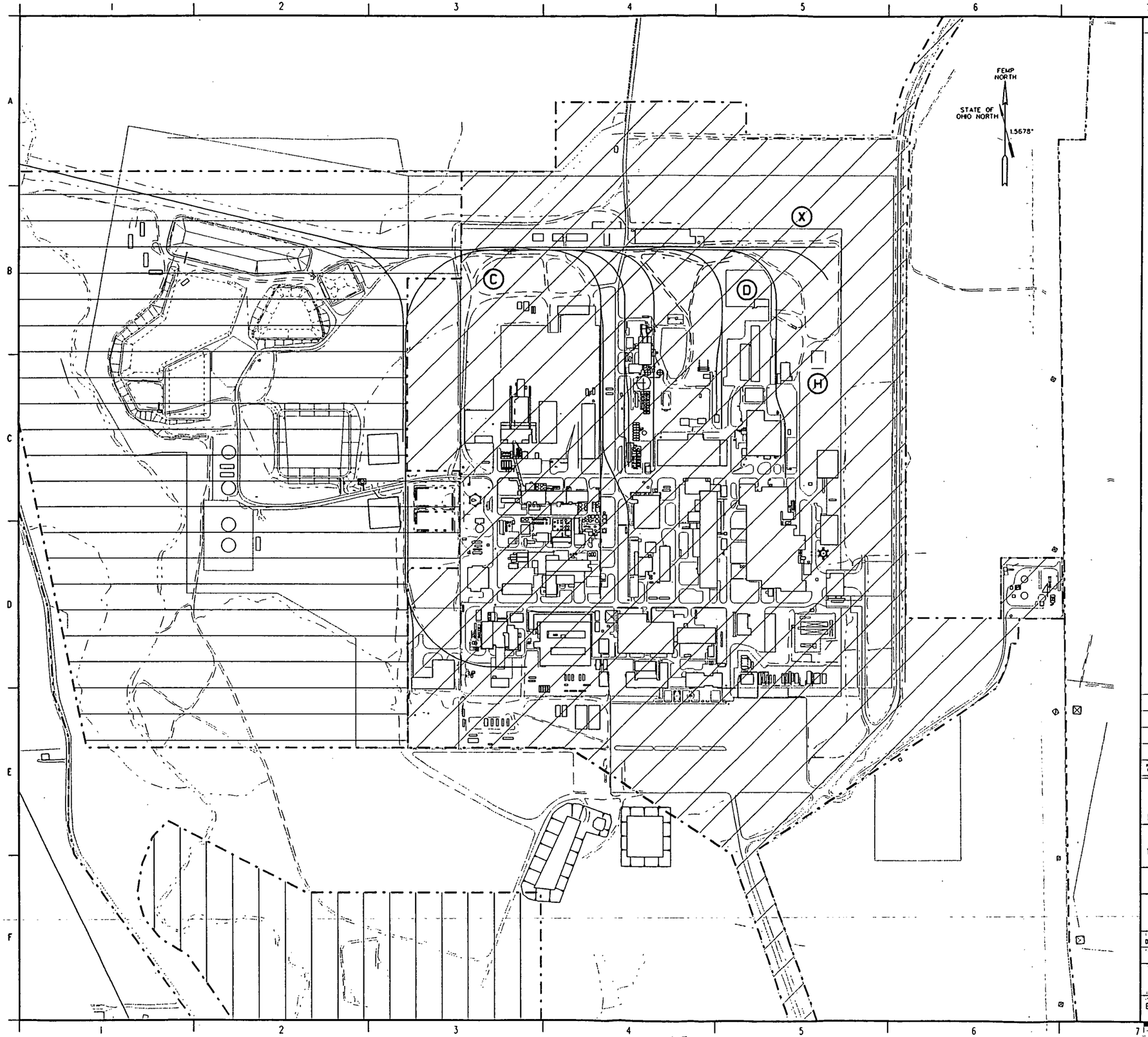
4.1.5 Selected Alternative

These above mentioned alternatives were evaluated (PARSONS 1992) with respect to protection from the elements, runoff control, long-term remediation considerations, operation considerations, ease of decontamination and decommissioning, and cost. The tension-support alternative was selected because it was determined to be the superior alternative with respect to ease of operation and effectiveness at isolating soil and debris from the environment in a cost-effective manner. Tension-support structures are currently used for similar applications at the FEMP and are commonly used in the environmental remediation industry. The tension-support structure concept is consistent with the long-term remedial action plan of the FEMP.

4.2 Improved Storage Facility Description

As discussed in Section 3, the FEMP anticipates that four improved storage facilities will be constructed to accommodate the storage of soil and debris. The facilities are proposed pending confirmation of the anticipated waste quantities and the development of design criteria. Preliminary design information for each structure is presented in Table 4-1. The proposed locations of the proposed facilities are shown on Figure 4-1.

The DFP, CSF, and the SMP will be designed as containment structures with a slab floor. Soil and debris will be transported to the containment structures for storage. The SRPC will be designed as an in-place containment structure that will be erected over an existing pile of soil/debris and will not have a slab floor.



NOTES

(C) = SOIL AND RUBBLE PILE COVER

(D) = SCRAP METAL PAD

(H) ▫ DECONTAMINATION FACILITY PAD

(X) = CENTRAL STORAGE FACILTY

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LEGEND

AREA OF CONTAMINATION "A"

AREA OF CONTAMINATION "B"

AREA OF CONTAMINATION "C"

NOTE: ADDITIONAL STRUCTURES MAY BE PROVIDED AS NECESSARY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	OPERATOR	DOE
		INITIALS AND DATE		

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - CHAS. T. MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT TITLE
FEMP ERA
IMPROVED STORAGE OF SOIL AND DEBRIS OU3/P020

DRAWING TITLE
FIGURE 4-1
LOCATION OF IMPROVED STORAGE STRUCTURES

D. Thompson	1-15-92		
		NONE	
		52	
BY D.O.E. LATER	WBS 00-90701	SK00087.DGN	A

Table 4-1 - Listing of Proposed Improved Storage Facilities

Proposed Name and Acronym	Approximate Size	Proposed Use	Approximate Location
Soil and Rubble Pile Cover (SRPC Structure)*	60 feet wide 300 feet long	Cover existing north third street soil and rubble pile	North of Plant 1 Pad
Scrap Metal Pad (SMP Structure)	2 facilities -- each 80 feet wide 180 feet long	Storage of metal debris	Northeast corner of process area
Decontamination Facility Pad (DFP Structure)	100 feet wide 100 feet long	Staging of contaminated metal scrap/debris prior to decontamination	Near new decontamination facility
Central Storage Facility (CSF Structure)	100 feet wide 400 feet long	Storage of soil and debris generated from various Removal Action and site construction projects	North of existing scrap metal pile

Note: * In-place containment structure

The CSF, DFP, and SMP Structures will have the following internal services:

a) Forced ventilation equipment mounted on the floor (unless detailed design indicates static ventilation is sufficient).

b) Electrical lighting to Illuminating Engineering Society of North America warehouse illumination levels.

c) A small office trailer will be provided at the CSF for facility supervisory/security and health physics uses. This office trailer will be equipped with a telephone, and will also maintain worker comfort levels throughout the year.

d) Portable-type eyewash/hand-held drench stations will be provided at appropriate locations. These will be heat traced/freeze protected.

e) A warehouse-type sweeper/vacuum will be used periodically to clean the floors of the storage structures. In addition, process water connections for periodic "wash down" of the facility floor may be provided. In addition, water will be needed to clean equipment before it is transferred for use on another pile. This will prevent cross-contamination between segregated piles. It is envisioned that a vehicle and equipment decontamination pad will be constructed at the CSF. Water used for decontamination purposes will be collected in a sump and pumped to a portable tank for subsequent treatment at Plant 8.

The following design considerations will be applied to the structures:

1) Radiological and security access controls will be consistent with DOE Orders, ALARA goals, NCP, 29 CFR 1910.120, and ARARs. The six proposed facilities will be located within fenced areas of the FEMP.

2) Provisions shall be made for appropriate environmental monitoring of the air, soil, water runoff, and groundwater. During construction, stormwater will be appropriately managed to abate discharges of potential contaminants to the environment.

3) All facilities and structures will be designed for easy decontamination, removal, and disposition upon project completion.

4) Location of the structures will consider the needs of other projects at the FEMP.

5) Jurisdictional wetlands and areas within 100-year floodplains have been and will continue to be avoided when siting improved storage facilities (siting criteria are addressed in the ARARs table).

The SRPC will be an in-place containment structure. Since this structure is intended to cover the existing soil and debris piles, ventilation, lighting, fire water, office structures, or process water will not be developed for this structure. Essentially, installation of this structure will only require a foundation that is adequate for the structure and any grading necessary to manage stormwater properly. However, the design of the facility will not prevent the upgrade of lighting and ventilation systems necessary for future remediation.

The following permanent facility services will not be required for in-place containment structures:

1) Restrooms, showers, lunch or breakrooms
2) Parking lot (beyond a laydown/parking area during construction)
3) Potable water
4) Steam or air
5) Heating and air conditioning
6) Fire water sprinklers

The following subsections describe the features of the improved storage facilities that will be provided.

4.2.1 Design Concepts for the Containment Structures

The containment structure will consist of a tension-support structure that is constructed over a floor slab. The following subsections describe the design features for each engineering discipline.

4.2.1.1 Civil/Structure/Architectural

Containment structures will be built with connected long-span arches and fabric siding. A typical section of the tension-support structure is shown in Figure 4-2. Structural design criteria will be established for this removal action that are based on the requirements of DOE Order 6430.1A. State and local building codes are reviewed for possible conflicts with the criteria of DOE Order 6430.1A. The Ohio Basic Building Code (OBBC 1989) governs issues not covered in the DOE Order 6430.1A.

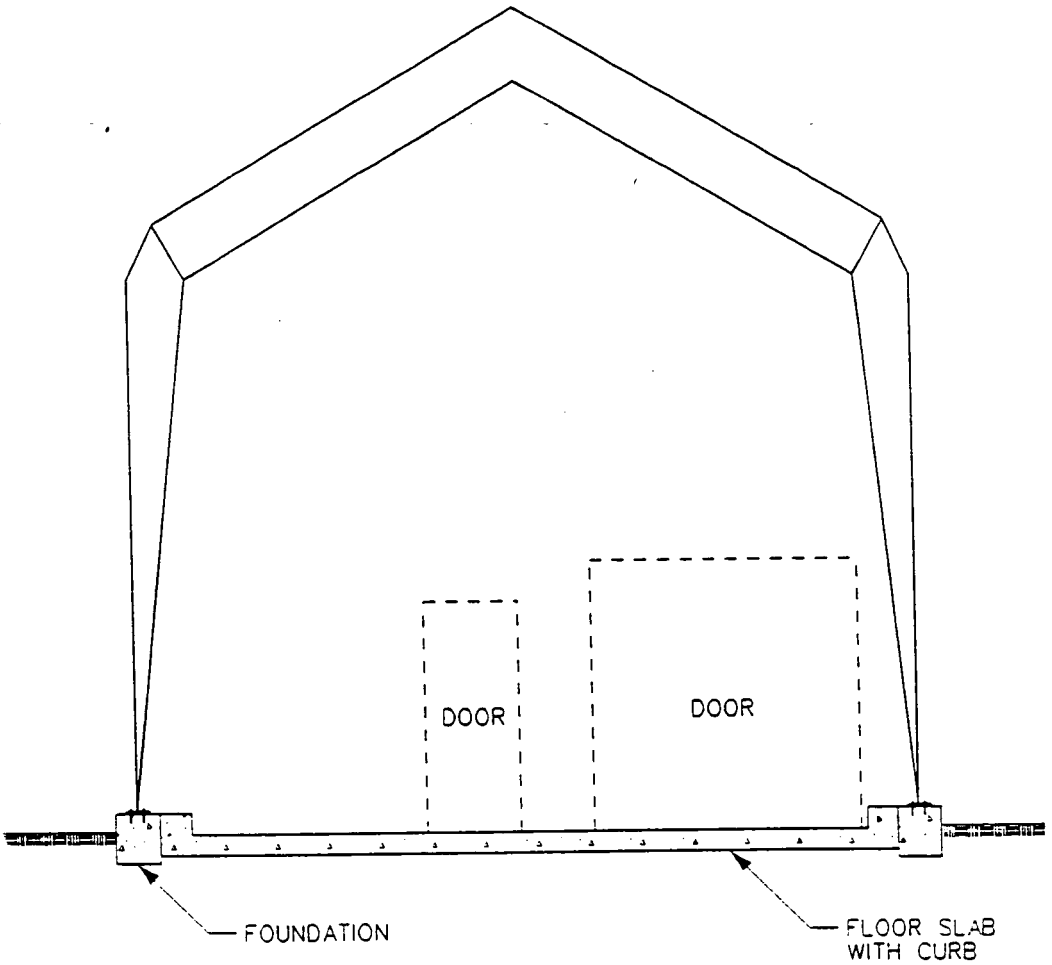
The containment structure will require a strip foundation in order to resist wind and tornado loads. The strip foundation will prevent overturning and sliding due to lateral forces. The top of the concrete will be higher than the subgrade surface to prevent runon from entering the structure.

Dry methods of decontamination will be favored in comparison to wet methods. However, periodic washing of contaminated equipment may be required. Therefore, a sump drain system will be required. This system will also collect liquids that might leach from the contaminated soil and debris piles. Portable sump pumps will be provided to remove collected liquids.

The facilities will be designed so that water collected in sumps can be sampled and analyzed before it is removed from the collection sump by a portable pump. The water will be pumped into a portable tank and transported to the Plant 8 sump for treatment.

Ditches and drains for surface water removal will be provided to connect to the existing drains and ditches. The new drainage systems will be designed in accordance with the requirements of DOE Order 6430.1A, Section 0270-2, and will be designed to accommodate a minimum of a 25-year, 24-hour, storm event per RM-FMPC-0001. The drainage ditch gradients will be limited to prevent erosive velocities. The existing drainage system will be upgraded as required.

Liquid collected in drainage ditches and gutters from stormwater runoff will be discharged into storm sewers, drainage ditches, and may be controlled by splash blocks or paving, as required by DOE Order 6430.1A, Section 0760-2.3.2.



TYPICAL SECTION OF TENSION SUPPORT STRUCTURE

Figure 4-2 - Typical Section of Tension-Support Structure

4.2.1.2 Material Handling

It is anticipated that material handling equipment (loaders, backhoe, etc.) will be used to handle materials within the structures. Soil and debris will be segregated inside each facility depending upon their physical/chemical characteristics. Soil and debris will be further segregated into:

1) Hazardous/Radioactive (Mixed) Materials
2) Asbestos-Contaminated Materials (interim storage)
3) Radioactive Non-Hazardous Materials
4) UST Materials
5) PCB-Contaminated Materials

Segregation barriers will be installed to define storage areas for each type of waste. Soils will be segregated from debris because it is anticipated that final treatment/processing/disposal will be different for each material. Most of these barriers will be portable so that the area storage capacity can be adjusted as needed. This option will maximize the operating flexibility for the facilities. One of the barriers will be fixed to allow the waste to be pushed against it during operations and retrieval. The barriers will be designed to withstand forces exerted by the material handling equipment. Fixed barriers will be made of concrete or other suitable construction material. The height of the segregation barriers will depend on the required storage capacity as well as the angle of repose of the waste. It is predicted that the barriers will not exceed 6 feet in height.

Waste piles will be reclaimed from one end only to allow the material handling equipment to back into the aisleway provided for its operation. Various types of attachments such as a backhoe, grapple, or loader may be required. All attachments will be of the small connector type so that minimal time is lost during changeover.

Each facility will have equipment doors at each end for facility operations, removal of equipment, and maintenance. Access will also be provided for operating personnel to enter the facility. Normally, all equipment will be stored inside the facility.

Dump trucks (or containers on flat-bed trucks) will be used to transport soil and debris to the storage facilities. Soil and debris will be directly transferred from the containers or dump truck to the storage facility (this will be the preferred method.) Materials may also be unloaded outside and later transferred into the facility by commercially available material handling equipment (if necessary). Equipment will not require special modifications since soil and debris are expected to be low-level radioactively contaminated. Personnel working inside the facility will be required to wear personal protective equipment and follow guidelines as stipulated in the Health and Safety Plan.

4.2.1.3 Electrical

All of the containment structures will require electrical power for mechanical ventilation and safety shower heat tracing. The fabric material will be translucent; therefore, indoor lighting requirements for daytime operation will not be required. This will be reviewed during the design phase. The buildings' metal framework will be grounded. Electrical power will be provided to the Central Storage Facility's office trailer which will be pre-wired.

4.2.1.4 Heating, Ventilating, and Air Conditioning

The Central Storage Facility and the Decontamination Facility Pad structures will be designed within the following parameters:

1) Mechanical ventilation will be provided to remove fumes from machinery used inside the structures.

2) Heating and air conditioning will not be provided.

3) The office trailer provided at the CSF will have a HVAC system to maintain worker comfort levels. Fire protection (sprinkler) will be provided for this trailer.

4) Portable-type eyewash/hand-held drench stations will be provided at appropriate locations. These will be heat traced/freeze protected.

4.2.1.5 Facility Siting

A site contaminant assessment will be performed for the CSF and any other future containment structure that will not be constructed over an existing pad. This assessment will be conducted during the siting of containment structures, but will not be conducted for construction of in-place containment structures over existing piles. The contaminant assessment specified in Section 3.3 will be utilized for the determination of potential contaminants. A containment structure will not be constructed at a site that contains hazardous, PCB, or petroleum product contaminants. In addition, the siting requirements presented as ARARs for this Removal Action (Attachment 2) will be complied with during site selection.

4.2.2 Design Concepts for the In-Place Containment Structures

The in-place containment structure will consist of a tension-support structure that is anchored to a strip foundation. In-place containment structures do not have a floor slab. The following subsections describe the design features for each discipline.

4.2.2.1 Civil/Structural/Architectural

An in-place containment structure will be designed similarly to the containment structure except that there will not be a floor slab. The foundation of the in-place containment structure will require a strip foundation in order to resist wind and tornado loads. The strip foundation will prevent overturning and sliding due to lateral forces. The top of the concrete will be higher than the subgrade surface to prevent runon from entering the structure.

Ditches and drains for surface water removal will be connected to the existing drains and ditches. These drainage systems shall be designed in accordance with the requirements of DOE Order 6430.1A, Section 0270-2. The drainage control systems will be designed to accommodate a minimum of a 25-year, 24-hour, storm event per RM-FMPC-0001. The drainage ditch gradients will be limited to prevent erosive velocities. The existing drainage system will be upgraded as required.

Liquid collected in drainage ditches and gutters from stormwater runoff will be discharged into storm sewers and drainage ditches and may be managed by splash blocks or paving, as required by DOE Order 6430.1A, Section 0760-2.3.2.

4.2.2.2 Material Handling

The piles will be regraded prior to construction of the in-place containment structure. There will be very little movement of materials once the structure is erected. When material handling is necessary, the same procedures specified for the containment structures will be utilized.

4.2.2.3 Electrical

The in-place containment structures will not require electric power.

4.2.2.4 Heating, Ventilating, and Air Conditioning

The in-place containment structures will not require an HVAC system.

4.2.2.5 Facility Siting

Contaminant assessments for siting (as described in subsection 4.2.1.5) do not apply to in-place contaminant structures. However, compliance with ARARs for siting (i.e., avoidance of wetlands) is required.

4.2.3 Design Concept for Controlled Stockpile

The controlled stockpiles will not require isolation from wind and precipitation because the radioactive concentrations will be below 100 pCi/g. However, runon and runoff controls will be implemented to prevent water from running onto the piles and to ensure that precipitation runoff flows away from the controlled stockpile areas. Ditches and drains for surface water removal will be connected to the existing drains and ditches. These drainage systems shall be designed in accordance with the requirements of DOE Order 6430.1A, Section 0270-2. The drainage control systems will be designed to accommodate a minimum of a 25-year, 24-hour, storm event per RM-FMPC-0001. The drainage ditch gradients will be limited to prevent erosive velocities. The existing drainage system will be upgraded as required.

Seeding the pile will be the likely erosion control method. Polymeric barriers may also be used to prevent erosion. It is envisioned that each AOC will have a controlled stockpile to minimize movement of material and to provide a source of fill material for other projects within the AOC which may require fill material.

The siting ARARs concerning wetlands and floodplains (Attachment 2) will be complied with during the selection of a location for a controlled stockpile.

4.2.4 Phase I Period Design

Phase I soil piles will be managed by placing a heavy tarpaulin on the ground in the area where soil is to be stored. To drain runoff away from the stockpile area, the site of the stockpile will be an area slightly higher in elevation than the surrounding areas. The perimeter of the tarpaulin will be securely fastened to the ground by stakes or other appropriate means. Soil will be piled starting at the center of the tarpaulin and proceeding outward. Soil will not be placed within 3 feet of the edge of the tarpaulin. Each day, at the completion of that day's stockpiling activities and all excavating activity, a second tarpaulin will be placed over the stockpiled soil. The stockpiled soil will be completely covered by the tarpaulin, and the tarpaulin will be well secured at its perimeter and intermittently over its surface area to avoid wind disturbance. Covering the stockpile with the tarpaulin will prevent precipitation from coming in contact with the stockpiled soil. Precipitation will fall onto the tarpaulin cover and run by gravity to the ground.

Track-mounted construction vehicles shall not be driven onto the tarpaulins. Tarpaulins shall be provided with temporary wooden access ways for wheeled vehicles to drive onto the tarpaulin without causing tears or punctures.

After final disposition of the stockpiled soils, tarpaulins will be dispositioned in an appropriate manner considering the types of contaminants identified within the soils stored on or under the tarpaulin in question. Soil stockpile areas will be seeded after removal of stockpiles and tarpaulins.

4.3 Permitting Requirements

Pursuant to CERCLA Section 121(e), 40 CFR 300.400(e), and Section XIII.A of the Amended Consent Agreement, on-site removal actions are exempt from the procedural requirements to obtain Federal, State, or local permits. However, the removal action must satisfy all Federal and State standards, requirements, criteria or limitations that would have been included in any such permit to the extent required by CERCLA and the NCP.

For any proposed on-site response action which, in the absence of CERCLA Section 121(e) and the NCP, would require a Federal or State permit, Section XIII.B of the Amended Consent Agreement requires DOE to include in its submittal to the US EPA:

1) Identification of each permit that would otherwise be required,
2) Identification of the standards, requirements, criteria, or limitations that would have been necessary to obtain each such permit, and
3) Explanation of how the response action will meet the standards, requirements, criteria, or limitations identified in Item 2.

The purpose of this subsection is to fulfill the submittal requirements set forth in Section XIII.B of the Amended Consent Agreement. Each permit that would otherwise be required is identified in the subsections that follow.

4.3.1 Hazardous Waste Facility Installation and Operating Permit

For any new hazardous waste storage facility within the State of Ohio, the Hazardous Waste Facility Approval Board (HWFAB) issues the installation and operating permit. Since it is proposed to store a limited quantity of hazardous waste in the Improved Storage Facilities, a permit from the HWFAB would be required in the absence of CERCLA Section 121(e). The permitting requirements are identified in OAC Title 3745 Chapter 50 and address siting constraints, design standards for storage facilities, and operating requirements.

The pertinent standards, requirements, criteria, or limitations for the construction and operation of a hazardous waste storage facility are identified as ARARs in Attachment 2. The proposed approach to satisfy each of these ARARs is documented in Attachment 2 and addressed within this RAWP. In general, the siting constraints are fully satisfied. Compliance with the hazardous waste storage facility design standards is addressed in Section 4.2. Procedures were established to comply with the hazardous waste operational requirements (e.g., emergency planning, monitoring, records, and training) for the existing hazardous waste facilities. These current FEMP procedures and subsequent revisions will be followed for the Improved Storage Facilities.

4.3.2 NPDES Stormwater Discharge Permit

An NPDES Stormwater Discharge Permit is required under 40 CFR 122.26 for specifically identified industrial facilities. These regulations require the owner/operator to establish sample collection locations and analytical parameters to monitor stormwater discharges. A sitewide monitoring program is being established for the FEMP and will be identified in the sitewide NPDES Stormwater Discharge Permit Application. Since the stormwater resulting from the Improved Storage Facilities and Controlled Stockpile Area will be handled by the existing sitewide drainage system, these stormwater discharges will be monitored in accordance with the sitewide stormwater monitoring program. As such, a separate NPDES Stormwater Discharge Permit Application would not be required for this removal action. The improved storage of soil and debris is anticipated to reduce the amount of contaminants in stormwater runoff.

4.3.3 NESHAP Permit

A permit is required under 40 CFR 61.07 for the construction of a new source or the modification of any existing source which emits a regulated hazardous air pollutant. The Improved Storage Facilities could be designated as a new source of radionuclide emissions under 40 CFR 61, Subpart H. Since the radionuclide emissions from the Improved Storage Facilities are expected to be below the specified limitation, no permit would be required for this removal action.

4.4 Implementation

The generator of soil and debris material will conduct a contaminant assessment. Additional sampling and analysis may be required as a result of the initial data review. The Sampling and Analysis Plan (Section 7) provides guidance for characterizing soil and debris if necessary. Characterization information and the Material Evaluation Form (Attachment 4) will be provided to the storage facility operator. The soil and debris material generator (responsible project) will be responsible for the completion of the material identification/classification (Material Evaluation Form) shipping papers and transportation to the improved storage facilities.

The operator in charge of the improved storage facilities will review the documentation, inspect the incoming materials (if necessary), and designate the specific storage location. The operator will have the authority to reject soil and debris materials that do not meet the acceptance criteria (i.e., free liquids; combined materials that require segregation; PCB or asbestos materials that are not properly containerized; and materials that are ignitable, reactive, and incompatible).

During the storage period, the storage facility operator will be responsible for facility maintenance and day-to-day material placement/movement operations. These activities will be minimized.

It is likely that the existing pile of soil and debris will be regraded prior to the construction of the SRPC. It is unlikely that the scrap metal will be removed prior to the construction of the SMP (due to Removal Action Number 15). However, sampling and analysis of the scrap metal pile and the existing soil pile located on Third Street will not be required. New materials will not be stored in existing in-place containment structures.

During the storage period, the storage facility operator of the in-place containment structure will be responsible for facility maintenance. There will be very little movement of materials or day-to-day operations for the in-place containment structures.

4.5 Integration with the Remedial Action

This removal action will be managed by the DOE and WEMCO OU-3 coordinators to ensure compatibility with the final remedial action(s) selected. Data and results from this removal action will be provided to the RI/FS contractor to be used in the evaluation of final remedial options for both OU-3 and OU-5.

The Uranium Removal from Soil Technology Demonstration Program will initiate construction of a prototype soil remediation system at the FEMP. The objective of this program is to demonstrate and select an efficient, cost-effective soil remediation system that can be used on site. Contaminated soils from the improved storage facilities, as well as those generated during the implementation of the remedial actions, could be treated by the selected soil remediation system that may be established at the FEMP.

In addition, a decontamination facility is being constructed at the FEMP. The Decontamination Facility Pad will be constructed to support the decontamination facility. Some debris materials (i.e., recoverable scrap metal, structural steel, and scrap copper) stored in the various improved storage facilities may be sent to the decontamination facility. Following decontamination, these materials could be sold as scrap and/or recycled.

Removal Action 15 is currently underway to remove the scrap metal pile that exists on the scrap metal pad. The tension-support structure is scheduled to be constructed over the existing location prior to the receipt of additional debris materials.

SECTION 5

ARAR WAIVERS

This removal action will attain compliance with ARARs to the extent practicable, considering the exigencies of the situation (see 40 CFR 300.415(i)). In determining whether compliance with ARARs is practicable, the DOE may consider the urgency of the situation and the scope of the removal action to be conducted. In addition to considering the practicability of an ARAR, 40 CFR 300.415(i) provides for obtaining a waiver from an ARAR if the conditions of 40 CFR 300.430(f)(l)(ii)(C) are met. These conditions are derived from CERCLA Section 121(d)(4).

There are two ARARs identified in Attachment 2 which are required to implement the proposed AOC concept at the FEMP. The purpose of this section is to provide the justification for invoking an ARAR waiver under 40 CFR 300.415(i) for these specific ARARs:

1) RCRA Land Disposal Prohibition (40 CFR 268.30 to 268.35)
2) RCRA Storage Prohibition (40 CFR 268.50)

An ARAR waiver for the Land Disposal Prohibition is necessary to relocate soil and debris from AOCs (other than AOC C) to the improved storage facilities in AOC C without constituting land placement. An ARAR waiver from the Storage Prohibition is necessary to allow the storage of soil and debris for periods exceeding 1 year in order to facilitate proper treatment or disposal. The ARAR waiver justification for the above identified ARARs is presented in this section.

As allowed in 40 CFR 300.415(i) and 40 CFR 300.430(f)(l)(ii)(C), a removal action that does not meet an ARAR may be selected under any of the following six circumstances:

1) The alternative is an interim measure and will become part of a total remedial action that will attain the ARAR (interim measure factor).

2) Compliance with the requirement will result in greater risk to human health and the environment than other alternatives (greater risk factor).

3) Compliance with the requirement is technically impracticable from an engineering perspective (technical impracticability factor).

4) The alternative will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, or limitation through use of another method or approach (equivalent performance factor).

5) With respect to a state requirement, the state has not consistently applied, or demonstrated the intention to consistently apply, the promulgated requirement in similar circumstance at other remedial actions within the state (consistent application factor).

6) For CERCLA-funded actions only, an alternative that attains the ARAR will not provide a balance between the need for protection of human health and the environment at the site and the availability of CERCLA funds to respond to other sites that may present a threat to human health and the environment. (This latter provision is not relevant to this non-CERCLA-funded action.)

RCRA Land Disposal Prohibition

Under this plan, the potential exists for the placement of soil and debris from specific designated areas of contamination and other on-site locations to improved storage facilities located outside of the AOC for the purpose of isolating contaminants from the environment. The material will be stored until it is treated/disposed in accordance with the CERCLA Record of Decision. Under the RCRA land disposal prohibition regulations (40 CFR 268.30 to 268.35), the placement of a restricted hazardous waste in a waste pile constitutes land disposal. As such, placement of a restricted hazardous waste on a waste pile contained within an improved storage facility outside of the AOC could be technically considered land disposal although this facility is not intended to be used for disposal. The land disposal of a restricted hazardous waste is prohibited unless the restricted hazardous waste is treated to meet the specified treatment standards (Best Demonstrated Available Technology [BDAT]) or a specific variance is granted by the US EPA. These variances include the national capacity variance, case-by-case extensions, a no-migration variance, and a specific treatability variance.

It is anticipated that most of the restricted hazardous waste that will be placed within the improved storage facilities will also contain radioactive contaminants. As such, the restricted waste materials will be designated as mixed waste. A national capacity variance was issued for mixed waste on November 22, 1989 (54 FR 48372), as a part of the third-third RCRA Land Disposal Restrictions (LDR) rulemaking. This national capacity variance will remain in effect until May 8, 1992. Based upon the current schedules for the CERCLA remediation at the FEMP, adequate soil and debris treatment and/or disposal capabilities are not anticipated to be available until the late 1990s.

The ARAR waivers from the application of the LDR treatment standards for the placement of restricted hazardous waste on a waste pile which is enclosed within an improved storage facility that is outside of the materials AOC are necessary for the implementation of this work plan. This position is generally consistent with the proposed redefinition of a waste pile found in the January 9, 1992, proposed US EPA rule on land disposal of hazardous debris (57 FR 958, 978). The proposed rule introduces the concept of a containment building for storage of debris. Debris piles within a containment building would not constitute waste piles under the proposed regulatory changes, and would therefore be exempt from the LDR disposal requirements.

The ARAR waiver is not for obtaining a RCRA LDR treatability variance; the need for such a variance will be evaluated during the selection of the final remediation for the soil and debris. The ARAR waiver is to affirm that an enclosed waste pile will not be regulated as a land disposal unit so as to invoke LDR requirements. The waiver is necessary for the duration of this removal action to allow the on-site management of restricted soil and debris within the improved storage facility. The basis for this waiver, in consideration of the six factors identified in 40 CFR 300.430(f)(l)(ii)(C), is as follows:

1) Managing the soil and debris in an enclosed structure and restricting liquid bearing waste will provide equivalent safety and environmental protection with respect to RCRA-designed waste piles. The position is supported by the proposed containment structure concept specified in the proposed regulatory changes for debris treatment. This supports a waiver under the equivalent performance factor.

2) This removal action is an interim measure for the storage of restricted hazardous waste until the final remedial alternative for these materials is selected and implemented via the ROD. The storage of this material as a waste pile within an enclosed structure is not intended to be land disposal. The intent of storage is to accumulate these materials for ultimate remediation in accordance with the land disposal restrictions. It is envisioned that either the selected remedial alternative will be adequate to attain the specified treatability standards or the need to obtain a treatability variance will be identified within the Feasibility Study Report in accordance with US EPA guidance (US EPA 1990). This is justification for a waiver under the interim measure factor.

3) Compliance with treating the restricted hazardous waste to the BDAT treatability standards is technically impracticable at this time since adequate treatment capabilities are not currently available. Treatment of soil and debris to BDAT standards may also pre-judge the ultimate treatment (disposal) method selected under CERCLA. The US EPA recognizes that soil and debris are significantly different from the industrially generated waste evaluated during the establishment of the current LDR treatment standards (see 55 FR 8760). Based upon this determination, the US EPA has provided that, until specific standards are promulgated, the current LDR treatment standards are generally inappropriate or not achievable for soil and debris from CERCLA response actions and RCRA corrective actions/closures, and that it would grant soil and debris treatability variances under these circumstances (see US EPA's Superfund LDR Guide #6B). This supports a waiver under the technical impracticability factor.

RCRA Storage Prohibition

The storage of a restricted hazardous waste is prohibited unless the waste is stored on-site in tanks or containers solely for the purpose of accumulating sufficient quantities of hazardous waste, as necessary, to facilitate proper recovery, treatment, or disposal. The storage of prohibited hazardous waste is limited

to 1 year unless the DOE can demonstrate that a longer period of time is required to facilitate the proper recovery, treatment, or disposal (40 CFR 268.50). The storage of the waste material is not prohibited in cases where the US EPA has issued an LDR variance (i.e., national capacity variance, case-by-case extension, no migration petition, or a treatability variance) or where the restricted waste is treated to meet the appropriate LDR treatment standards.

The US EPA issued a policy statement on the relaxed enforcement of the RCRA land storage restriction because the agency recognizes that there are limited treatment and disposal options for mixed waste (56 FR 42730). The policy provides a variance from the LDR storage prohibition for facilities that generate no more than 1,000 cubic feet of mixed waste per year until December 31, 1993. The FEMP anticipates generating more mixed waste soil and debris than the specified maximum. It is likely that storage of mixed waste soil and debris at the FEMP will extend beyond this termination date.

Therefore, an ARAR waiver from the 1-year restriction on the storage of restricted waste in containers (40 CFR 268.50(a)) is required for the implementation of this work plan. The waiver is necessary for the duration of this removal action to allow the on-site management of restricted soil and debris within the improved storage facility. The basis for this waiver, in consideration of the six factors identified in 40 CFR 300.430(f)(l)(ii)(C), is as follows:

1) The storage of restricted soil and debris is an interim measure for the purpose of accumulating the waste to facilitate the proper treatment of these materials. This point supports a waiver under the interim measures factor.

2) The placement of soil and debris in containers requires additional handling of the soil and debris during their generation, as well as subsequent treatment if required. This additional handling could result in greater risk to the health and safety of employees. This point supports a waiver under the greater risk factor.

3) The storage of restricted soil and debris in an improved storage facility will provide a standard of performance that is equivalent to containerizing the waste. The soil and debris will be protected from precipitation, runon/runoff and wind dispersal. Liquids, materials containing free liquids, or wastes which will generate leachate through decomposition will be excluded from the improved storage facilities. This point supports a waiver under the equivalent performance factor.

This waiver is necessary for the duration of this removal action to properly develop the required treatment capabilities in accordance with the schedules established under the CERCLA Consent Agreement (US EPA 1991) for the FEMP remediation activities. Therefore, the waiver is necessary until the remediation projects are implemented. At that time, the soil and debris will be removed from the storage areas and treated/disposed in accordance with the approved ROD. In summary, an ARAR waiver from the

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specified LDR provisions identified in 40 CFR 268.30-268.35 (land disposal) and 40 CFR 268.50 (storage) is necessary for the implementation of this work plan. It is necessary that the waivers be effective until the remedial alternatives are selected, designed, and implemented in accordance with the ROD. The waivers are justified with respect to one or more of the factors specified by 40 CFR 300.430 (f)(1)(ii)(C).

SECTION 6

MANAGEMENT SUPPORT

Activities that will be undertaken prior to the actual site work are planning, training, designing, and management of the removal action preparatory efforts. These activities are required to render the work areas reasonably free of hazards to personnel and/or the environment.

6.1 Roles of Participants

The following organizations will be involved with various activities associated with the RAWP.

The United States Department of Energy is the owner of the FEMP, and is responsible for the oversight of all site activities.

Westinghouse Environmental Management Company of Ohio (WEMCO) is the site integrator contracted to the DOE. WEMCO operated the site from 1985 until production ceased in 1989 and now is tasked with managing the site during its restoration. The WEMCO waste management department will be responsible for the implementation of this soil and debris management plan.

RUST Engineering is the Construction Management Contractor to WEMCO. RUST Engineering will supervise the construction of the improved storage facilities.

Advanced Sciences Inc./International Technology (ASI/IT) is the exclusive contractor to WEMCO to perform the Remedial Investigation and Feasibility Study for the FEMP. ASI/IT is not predicted to be involved with the construction or operation of the improved storage facilities. However, this group may supply analytical data from the RI/FS activities to aid in the soil and debris contamination assessment.

PARSONS is the architectural/engineering firm contracted to WEMCO to provide the remedial design to support the overall FEMP remediation. **PARSONS** will provide the engineering design for this removal action. This effort includes the evaluation of alternatives for improved storage and preparation of the RAWP.

The Construction Contractor is the organization that will construct the improved storage structures. This contractor will be selected through the standard DOE bid and award process.

The United States Environmental Protection Agency (US EPA) has approval authority for this work plan.

The Ohio EPA may provide guidance and participate in the development and review of this work plan.

6.2 Project Planning Activities

The following project planning activities will be performed prior to the implementation of this removal action.

Project Planning

Included in this activity will be the preparation of detailed task listings and delineation of responsibilities. These project planning documents will be established as the internal DOE control mechanism to ensure that the removal action is implemented to meet the schedule milestones identified in Section 6.4.

Design of Removal Action

Definitive design documents will be prepared for the removal action construction work.

Training of Personnel

Section 6.5 presents the training requirements.

Bid and Award/Construction Management

All bid and award documents will be prepared for the removal action construction work along with the procurement of all equipment, materials, and subcontractors necessary to complete the removal action construction work.

Revision and Preparation of Operating Procedures

The FEMP will revise existing operating procedures and prepare new procedures to implement the soil and debris management plan. Table 6-1 lists the operating procedures that will be revised, and Table 6-2 identifies new operating procedures that will be prepared. The Material Evaluation Form Procedure (SSOP-0002) will be revised to address the contaminant assessment. The procedure will outline the steps that will be taken to determine whether a specific project will generate soil and debris and how to obtain the data necessary to complete the Material Evaluation Form. This procedure will also specify contaminant concentrations that, if exceeded, will require improved storage. The specific concentrations will likely be based on limits such as:

1) 100 pCi/g for total uranium in natural isotopic distribution
2) TCLP limits for hazardous constituents
3) 50 parts per million for PCB contaminated materials

4) 1 percent (by volume) for friable asbestos

Operational procedures will be prepared for the containment structures (CSF, SMP, and DFP) to specify the facility waste acceptance criteria and to specify the storage disposition requirements. The procedures will also address how segregated piles will be managed and how equipment will be used and decontaminated. An inspection procedure will also be developed to guide the inspection of all the various types of improved storage facilities. It should be noted that specific projects will produce individual work plans that follow the guidance of this sitewide soil and debris management plan. The individual plans will utilize the specific procedures listed in Table 6-1 and 6-2.

Table 6-1 - Existing Procedures Requiring Revision

Procedure	Title
SSOP-0002	Material Evaluation Form
RM-0005	Lot Marking and Color Coding System
SSOP-0044I (interim)*	Controlling the Generation of Construction/Maintenance Waste

*Note: This procedure will be superseded by new procedures developed as a result of the work plan.

Table 6-2 - New Procedures Requiring Preparation

Procedure	Title
To Be Determined	Contaminant Assessment Waste Acceptance Criteria
To Be Determined	CSF Operation Procedure/Waste Acceptance Criteria
To Be Determined	DFP Operation Procedure/Waste Acceptance Criteria
To Be Determined	Improved Storage Facility Inspection

6.3 Operations and Data Management

6.3.1 Phase I Operations

Soil and debris generated during Phase I will be managed according to the provisions of Section 3. Soil piles will require maintenance (i.e., tarp placement, seeding) until Phase II of this removal action is implemented. Weekly visual inspections will be performed during this time period.

The controlled stockpiles will be easy to maintain because the pile will only be seeded, and equipment will dump or load soil on an as-needed basis. Grading may be required to rework the pile after dumping or loading activities. Active portions of a controlled stockpile may be covered with tarpaulins or polymeric spray coatings.

6.3.2 Phase II Operations

Soil and debris that will be generated in Phase II (and require improved storage), or existing materials that require relocation will be contained within partitions/walled areas of the containment structures. The partitions will segregate the petroleum, radioactive, hazardous, mixed, and PCB materials within the facility. The facility may also store, prior to disposal, segregated asbestos material that has been containerized in accordance with FEMP asbestos management procedures prior to disposal. Soil will also be segregated from debris.

A clear aisle space of sufficient width for the material handling equipment will be maintained. A warehouse sweeper/vacuum will be used to clean up soil and debris that spill from their respective piles. Front-end loaders will also be available as required to load, unload, and manipulate piles. Collected materials will be returned to their respective piles or the pile which is stored pursuant to the most restrictive regulation. Equipment will be washed or decontaminated before being used on another pile to prevent cross-contamination between segregated piles.

The existing piles that will be stored in place may be regraded during construction of the improved storage facility. Once the structure is built, there will be very little movement or maintenance of the soil and debris. Newly generated materials will not be stored in in-place containment structures. Sufficient space will be provided for construction equipment that will be required to remove the materials for treatment/disposal.

The controlled stockpiles will be easy to maintain because the pile will only be seeded, and equipment will dump or load soil on an as-needed basis. Grading may be required to rework the pile after dumping or loading activities. Active portions of a controlled stockpile may be covered with tarpaulins or polymeric spray coatings.

All of the improved storage facilities will be visually inspected weekly to make sure that leaks have not developed within the roof, that the soil and debris piles have not spilled over their area, and that liquids have not accumulated in the sumps. Controlled stockpiles will also be inspected on a weekly basis. Inspections will also be required after major storm events that exceed a 25-year storm intensity. An inspection procedure with an inspection form will be developed during the implementation of the soil and debris management plan. The weekly inspection form will be signed by the inspector and the facility operation supervisor and placed in the file. If a problem is identified during an inspection, then the form will be given to the maintenance department with detailed repair instructions prepared by the facilities design group. Once the repairs are completed, the maintenance supervisor will sign the form and return it to the inspector. The inspector will inspect the repair work and sign the form signifying completion of the repairs.

Liquids that may accumulate in sumps within the improved storage facilities are likely to result from drainage of liquids from waste piles, leaks in the roof, potential equipment decontamination, and safety shower/eyewash waste. It is anticipated that the volume of liquid waste will be small and irregular in frequency of generation. Portable pumps will be provided to remove liquid wastes as required. The collected liquid will be transferred to the Plant 8 sump. This wastewater will be combined with other plant wastewaters for treatment prior to discharge to the Great Miami River via the existing National Pollution Discharge Elimination System (NPDES) permitted outfall. As such, the treatment and discharge of this decontamination wastewater and the monitoring of the effluent discharge will be in accordance with the existing Permit to Install/Permit to Operate and NPDES permits issued to the FEMP by the Ohio EPA. In consideration of the anticipated contaminants and the expected volume of wastewater to be generated, the existing wastewater treatment facilities are deemed to be adequate.

6.3.3 Phase I and II Database/Planning

The development and upkeep of a computerized database for material tracking will be an important component to the successful implementation of the remediation effort at the FEMP. Analytical results from soil and debris sampling will be entered into the computerized database. In general, data containing the origin, quantity, and contaminant concentrations of soil and debris will be entered into the database so that the materials can be accounted for while in storage. This information will be used when the materials are utilized or treated/disposed. Material from the controlled stockpile may be used to fill excavations and for other engineering applications. However, the use of this soil will be logged into the database with respect to contaminant concentration, soil quantity, and origin. Wastes that are treated/disposed from the improved storage facilities will also be entered into the database with respect to concentration, quantity, and origin. This procedure will allow the tracking of soil and debris from their point of origin to their final point of use/disposal. This information will ultimately be used as characterization input into the sitewide post-remediation risk assessment.

The FEMP uses a coding system to identify waste materials with respect to waste type and origin. FEMP document RM-0005, Lot Marking and Color Coding System (issued August 23, 1991), describes the

identification system. The soil and debris management plan will use this system for the computerized database tracking system. The coding system will identify materials by a number that consists of the following five elements:

1) Production Order Number
2) Origin or Source Code
3) Class or Enrichment Code
4) Material Description Code
5) Lot or Sequence Number

The Production Order Number identifies key production activities. It usually consists of a letter designation followed by three numerical digits. A special designation code may be established for CERCLA removal actions, and the numerical digits will indicate from which Operable Unit and AOC the material originated. Waste packaged specifically for shipment to the NTS has been designated as N003.

The Origin or Source Code is a three-digit code with a block of 100 numbers that have been assigned to each plant. The plants are divided into subareas with subordinate blocks of numbers (1-99) assigned to each. Additional numbers may be used to identify specific areas where soil may be generated on site because the 1-99 codes are geared toward plant production areas. The origin codes for wastes that were generated off site will be designated using the three-letter reporting identification symbol of the generator/shipper.

The Class or Enrichment Code will consist of one digit or letter that identifies the general class or enrichment of the soil and debris. The use of this code in combination with the material description code will make it possible to assign the same material description code to similar materials regardless of their class, enrichment, or special nature. This code may symbolize whether the soil and debris contain total uranium contamination that is greater than or less than 100 pCi/g.

The Material Description Code will be a three-digit code which is subdivided into residue and product categories. Soil and debris will typically have a material description code that is within the general low-grade residues (000-099). For example, contaminated soil, rocks, sand, bricks, and ceramics have been assigned the code 011; and contaminated steel, after washing/cleaning, is categorized as 004 under the existing systems. New codes may be assigned to soil and debris so that a specific code represents a specific type of material.

The Lot or Sequence Number will be a four-digit number which will be used to identify consecutive lots of specific material. Each month will be assigned a specific three-digit identifier with the fourth digit representing the specific successive lot number in cases where multiple lots (batches) are produced in a single month.

The FEMP Lot Marking and Color Coding System document RM-0005 contains tables that identify specific codes for each of these five elements of the identification system. Soil and debris materials will receive an 11- to 15-digit identification number, depending upon its origin, material, class/enrichment, and date of classification/sequence. This material identification information will be entered into the computerized database in addition to a code for the location of the storage destination. The database will also utilize a code to signify/track the final destination of the material. This code will identify the location of the shipped, utilized, or treated/disposed materials so that the materials and their chemical characteristics can be used in the sitewide post-remediation risk assessment. It should be noted that RM-0005 will be revised to incorporate the requirements of this Soil and Debris Management Plan.

6.3.4 Phase I and II Monitoring

RI/FS monitoring data will be an important component of the RAWP during the initial contamination assessment to determine where the soil and debris will be stored. The soil and debris will be sampled and analyzed prior to future treatment/disposal if it is required to ensure that the material can be effectively treated or to ensure that the material can be disposed in compliance with the regulatory requirements. This information may also be used within the sitewide post-remediation risk assessment. The analytical results obtained from each monitoring event will be entered into the computerized database. Section 7 provides a sampling and analysis plan that will be used for guidance during characterization and monitoring activities.

Environmental monitoring will be performed using existing sitewide monitoring stations and programs. The specific environmental media that are monitored include air, groundwater, and stormwater.

6.3.5 Phase I and II Program Modifications

The soil and debris management program will be modified, as necessary, to remain in compliance with regulatory changes and DOE Orders. The plan may be modified in response to new technological developments, including any modifications that are required as a result of the selection of a final remediation alternative. It should be noted that each construction site or removal action may have a unique set of requirements. If necessary, a sampling and analysis plan and a health and safety plan will be developed to address these unique conditions.

6.4 Schedule

A proposed milestone schedule for the removal action is presented in Tables 6-3 and 6-4. Actual dates are not specified because they are tied to US EPA approval of the RAWP.

Table 6-3 - Phase I Milestones for the Removal Action Schedule

Milestone	Activity Duration (months)	Cumulative Duration (months)*
Work Plan Approval	2	2
Provide Phase I Storage Upgrades for Existing Piles	4	NA
Revise Existing Procedures	4	NA

Table 6-4 - Phase II Milestones for the Removal Action Schedule

Milestone	Activity Duration (months)	Cumulative Duration (months)*
Design Completion (4 Storage Facilities)	9	11
Prepare New Procedures	14	By Construction Completion
Procurement/Mobilization of Construction	5	16
Construction Completion (4 Storage Facilities)	12	28

Notes: The design and construction of these facilities will be staggered.
* Number of months from approval of the work plan

NA = Activity will not increase the total duration.

The major milestone activities identified in Tables 6-3 and 6-4 are discussed in the following subsections.

6.4.1 Work Plan Approval

The FEMP has scheduled a 2 month period for agency review of this RAWP. The acceptance date will initiate design activities for the improved storage facilities.

6.4.2 Provide Interim Storage for Existing Piles

The FEMP will begin to implement the interim improvements to the existing soil and debris piles concurrently with the agency review. This activity will be completed within four months.

6.4.3 Revise Existing Procedures

The FEMP will revise the existing procedures (Table 6-1) upon approval of the RAWP. This activity is expected to require four months.

6.4.4 Design Completion

The FEMP will begin to design the improved storage facilities when the RAWP is approved. The design activities will include preparing design drawings for site work and utilities, and performance-type specifications for the tension-support structures. The design activity is anticipated to require 9 months.

6.4.5 Prepare New Procedures

The FEMP will prepare new procedures to implement the RAWP (Table 6-2). Preparation will commence upon approval of the RAWP. The FEMP will require 14 months to complete the new procedures because design details of the improved storage facilities will be required to establish operating procedures.

6.4.6 Procurement/Mobilization of Construction

This activity includes the selection of a vendor to supply the tension-support structures (including procurement) and a construction contractor to install the facilities. Five months have been scheduled for these activities.

6.4.7 Construction Completion of 4 Storage Facilities

Each improved storage facility is expected to require 6 months to construct. However, by staggering the construction start dates, the FEMP anticipates that all four improved storage facilities can be designed and constructed in 24 months.

6.5 Training of Personnel

Employees who will operate and inspect the improved storage facility will receive training in accordance with the applicable WEMCO policies and the requirements specified by 29 CFR 1910.120, 29 CFR 1926.21, and OAC 3745-54-16(A). Employees will receive the required training prior to starting work at any of the facilities for improved storage. The training will include radiation worker training with respirator training and quantitative fit testing.

SECTION 7

SAMPLING AND ANALYSIS PLAN

Contaminated soil and debris have been generated as a result of various activities at the FEMP near Fernald, Ohio. Contaminated material will continue to be produced as a result of maintenance, closure, and environmental response activities.

The FEMP will conduct an assessment of the contaminants that are contained within the soil and debris (Section 3.3). The assessment will include a review of existing analytical data (primarily the RI/FS data) and a review of historical and process operation knowledge to identify potential constituents of concern. Sampling and analysis will be performed for identified potential constituents that are not included in an existing analytical database. This section outlines a program to guide the sampling and analysis of soil and debris for the purpose of determining the materials' storage requirements. However, a specific sampling and analysis plan will be developed on a case-by-case basis for specific projects that require analytical activities.

7.1 Objective

The primary objective of this sampling and analysis plan is to collect representative samples that will allow both accurate and precise measurements of the chemical and radiological contaminants in the soil and debris. If the chemical measurements are sufficiently accurate and precise, then they will be considered reliable estimates of the chemical properties of the soil and debris.

This sampling and analysis plan describes the procedures that will be undertaken to obtain analytical data of sufficient quality and quantity to characterize the soil and debris generated at the FEMP. The plan is developed in accordance with the applicable environmental regulations and DOE Orders to ensure that the results are applicable for selecting storage requirements for the materials.

7.2 Parameters for Analysis

The FEMP will utilize historical information and process knowledge concerning chemicals and wastes that were stored, processed, or generated, in addition to results of the RI/FS as a guide for identifying potential analytical parameters. This section discusses the potential constituents that are likely to be contaminants within soil and debris.

7.2.1 Hazardous Constituents

Hazardous constituents have been used/generated in the facility processes and have been detected in soil and debris samples. It is a FEMP standard operating procedure that characterization of soil and debris materials from construction projects include TCLP analysis to determine presence and mobility capabilities of/for inorganic and organic constituents.

Selection of the specific constituents for analysis will be based on process/facility knowledge, results of the RI/FS program, including but not limited to the applicable constituents listed on the Hazardous Substance List and Appendix IX. Field screening may also be used to identify potential contaminants. An X-ray fluorescence spectrometer may be used as a general field screen for the presence of metals. A flame ionization detector or photoionization detector will be used to detect the presence of organic chemicals. Hazardous constituents that were used or produced on site and have been detected in the RI/FS program include arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, 1,1,1-trichloroethane, tetrachloroethylene, and trichloroethylene.

7.2.2 Radionuclide Constituents

The FEMP was involved in the manufacturing of a variety of uranium and thorium products between 1951 and 1989. As a result, uranium (and other radionuclide) contamination has been detected in soil and debris. Analysis will be conducted for the uranium isotopes U-234, U-235, U-238, and thorium isotope Th-232 in addition to their specific daughter products that have long half-lives. Initial screening for alpha, beta, and gamma contamination will be performed with hand-held monitoring devices. If the initial screening indicates that the soil and debris contains radioactive constituents, then additional analysis will be performed, based on process knowledge, the results of the RI/FS work, or a general list of radionuclides that could be present. Table 7-1 identifies the major radionuclides that may be present and their daughter products that result from natural radioactive decay.

Table 7-1 - Major Radionuclides and Their Daughter Products

Radionuclide	Daughter Products
U-238	Th-234, Pa-234, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210, Pb-206
U-235	Th-231, Pa-231, Ac-227, Th-227, Ra-223, Rn-219, Po-215, Pb-211, Bi-211, Tl-207, Pb-207
Th-232	Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Po-212, Tl-208, Pb-208

The following radionuclides may be included on the analytical list based on a review of their half-lives: Th-230, Ra-226, Pb-210, U-235, Pa-231, Ac-227. These are the uranium and thorium daughter products that have a long enough half-life that they could be expected to exist in significant concentrations within Th-228, Ra-228, and uranium contaminated soil and debris. In addition, Sr-90, Tc-99, Cs-137, Ru-106, and Np-237 may be analyzed for based on process knowledge and the results from the RI/FS program. It should be noted that the analytical list may be modified for each specific soil and debris pile or removal action project.

7.2.3 Additional Analysis

As necessary for specific applications, soils may be tested for geotechnical parameters such as moisture content, density, compressive strength, grain size, and will be classified with respect to type. This information, as well as the chemical characteristic data, will be entered into the computerized database for future waste tracking and risk assessment activities.

7.3 Sampling Procedures

7.3.1 Soil Sampling

In soil piles, the accessibility of soil for sampling is usually a function of pile size, a key factor in the design of a sampling strategy for a soil pile. Ideally, piles containing soil should be sampled using a three-dimensional simple random sampling strategy. This strategy can be employed only if all points within the pile can be accessed. In such cases, the pile should be divided into a three-dimensional grid system, the grid sections assigned numbers, and the sampling points then chosen using random-number tables or random-number generators. If sampling is limited to certain portions of the pile, then the collected sample will be representative only of those portions, unless soil is known to be homogeneous.

In cases where the size of a pile impedes access to the soil, a set of samples that are representative of the entire pile can be obtained with a minimum of effort by scheduling sampling to coincide with pile removal. The number of truckloads needed to remove the pile should be estimated and the truckloads randomly chosen for sampling. The EPA Test Methods for Evaluating Solid Waste (SW-846; Volume 2, Chapter 9) provides a rationale and methodology for determining the number of samples to collect when average concentrations can be estimated.

Soil samples will be collected with trowels, shovels, thief samplers, sampling triers, or other coring devices. Shovels may be appropriate for homogeneous waste piles, whereas thief samplers and sampling triers will be better suited for heterogeneous soil sampling (or sampling over a depth profile). Any equipment used for sampling will be decontaminated prior to taking any sample. Equipment will be cleaned as specified in Appendix J of the Fernald Environmental Project Quality Assurance Project Plan (QAPjP). The soil sampling techniques specified in the QAPjP, Section 6 (and Appendix K), will be followed to ensure consistency among data sets.

For the TCLP, the number of samples collected will be based on the volume of the material. Some of the samples will be used for the preliminary TCLP evaluations and radionuclide analysis. The remaining samples will be used to analyze the volatile organics and metals.

Hand-held alpha, beta, and gamma radiation detection devices will be used to survey soil samples for radionuclide contamination. This information will be required for packaging and transportation requirements, and may determine which laboratory will perform the analysis. The radiological screening information will also be used to determine if detailed radionuclide analysis is required.

Trip and rinsate blanks will be collected during sampling for Quality Assurance/Quality Control. These samples will be analyzed with the TCLP procedure and radionuclide analysis as required for the specific project.

7.3.2 Debris Sampling

Debris will be determined to contain hazardous waste based on process knowledge, TCLP analysis with any applicable SW-846 procedures, and if it is determined necessary, analysis for HSL constituents. It is very important first to identify what plant operations occurred within the immediate area of the debris. This information will provide guidance in determining analytical needs.

Debris with potential surface contamination will be measured with direct reading instruments and swipe tests in accordance with DOE Order 5400.5. The first method consists of scanning the debris with alpha, beta, and gamma detection devices. In swipe testing, the amount of removable contamination per 100 cm^2 of debris surface area will be collected by wiping the debris with a dry filter or soft absorbent paper. The amount of radioactivity will be measured from the swipe by appropriate radionuclide counting

instruments. The maximum contamination level applies to an area of not more than 100 cm^2. When removable contamination on objects with a surface area less than 100 cm^2 is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped for analysis. For materials that exceed 100 cm^2, a representative number of 100 cm^2 samples will be wiped. The results will be averaged to determine the expected concentration of radioactivity. The maximum result may also be used as an indicator of whether the material exceeds a free-release level.

It should be noted that radiation scanning (continuously while excavating) will be the preferred method of choice for debris piles with various materials of different shapes and sizes. The swipe test will be important for specific items that have been decontaminated and need to be tested to determine if they can be released.

7.4 Chain-of-Custody

An essential component of the soil and debris sampling and analysis plan is ensuring the integrity of the sample from collection to analysis and, finally to data reporting. A chain-of-custody procedure will be utilized so that the samples are traceable from the time of collection through analysis to the final result reporting. The chain-of-custody procedures that were developed and applied to the RI/FS program will be followed during the sampling and analysis of soil and debris. This chain-of-custody program is presented in the QAPjP, Section 7.

7.5 Analytical Procedures

The following subsections provide the analytical methodologies that will be used to determine the specific constituent concentrations for both soil and debris materials. Hazardous waste constituents will be analyzed according to the EPA Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846) procedures. Radionuclide activities will be counted based on procedures specified in the FEMP QAPjP. However, the data will also be used to support the RI/FS activities. Therefore, sampling and analysis will also meet the requirements of the RI/FS QAPP.

7.5.1 Soil Analysis

Appendix K (Table K-1) of the QAPjP specifies sample container and preservation requirements. Soil samples for hazardous waste constituents can be stored in pre-washed plastic or glass containers. The samples should be stored at 4 degrees C. The sample will be prepared for analysis by the TCLP as specified in 40 CFR 268 Appendix I. Preservatives must not be added to samples before extraction. TCLP extracts should be prepared for analysis (and be analyzed) as soon as possible following extraction. Extracts for metallic analysis should be acidified with nitric acid to a pH that is less than 2.0. Extracts for other analytes should be preserved in accordance with the guidance from the specific analytical

methodology. This procedure will result in the preparation of the sample for chemical analysis by techniques specified in SW-846. Table 7-2 provides US EPA-approved methods that can be used to determine concentrations of hazardous constituents. Table 7-3 provides methodologies that may be utilized to analyze the concentrations of radioactivity. A sufficient volume of soil should be collected for the required analytical procedures. At least a 250 ml sample should be collected for metal analysis. An additional 250 ml sample should be collected for hydrocarbon analysis. Two 40 ml samples will be collected for volatile organic analysis. (Additional analyses described in Section 3.3, if specified, will require approximately 2,000 grams.)

7.5.2 Debris Analysis

The same analytical procedures that are used for soils may also be used for debris. However, as discussed in Section 7.4, the sampling procedures differ. Sample preparation prior to analysis may differ in that some debris materials may require pulverizing or crushing prior to the TCLP procedure.

7.6 Quality Assurance

Laboratories in the US EPA Contract Laboratories Program (CLP) must follow specific analytical methods and QA/QC standards. These standards specified in the CLP Statement of Work for Organic and Inorganic Analyses and are audited by the US EPA. CLP protocols do not include radioanalytical procedures, which are necessary due to the radioactive components in FEMP wastes. To address this problem, WEMCO is developing CLP equivalent sampling protocols which will be included in the new sitewide QAPjP.

DOE Order 5400.1 requires all DOE and contract laboratories that conduct radiological analyses for environmental monitoring programs participate in the DOE Interlaboratory Quality Assurance Program. This program is coordinated by the DOE Environmental Measurements Laboratory (EML). Under this program, the DOE-EML submits (semi-annually) samples of various environmental matrices to participating laboratories for analyses of a variety of radionuclides. A report listing the performance of each participating laboratory is distributed semi-annually by the DOE-EML. The FEMP Analytical Laboratories are participating in the DOE-EML Interlaboratory QA Program on a continuing basis. The off-site contract laboratory that conducts radiological analyses for the FEMP also participates in the DOE-EML program. The quality assurance procedures that have been applied to the RI/FS program will be utilized during the sampling and analysis of soil and debris. This QA program is specified in the QAPjP.

Table 7-2 - Methods for Determining Concentrations of Hazardous Constituents for Parameters Commonly Detected in the RI/FS Analysis

Constituent	SW-846 Method of Analysis	Procedure
Arsenic	7060 7061	AA Furnace AA Gaseous Hydride
Barium	7080 6010	AA Direct Aspiration ICPAES
Cadmium	7130 7131 6010	AA Direct Aspiration AA Furnace ICPAES
Chromium	7190 7191 6010	AA Direct Aspiration AA Furnace ICPAES
Chromium (hexavalent)	7195 7196 7197 7198	Coprecipitation Colorometric Chelation/Extraction Differential Pulse Polargraphy
Lead	7420 7421	AA Direct Aspiration AA Furnace
Mercury	7471 6010	Manual Cold Vapor ICPAES
Selenium	7740 7741	AA Furnace AA Gaseous Hydride
Silver	7760 6010	AA Direct Aspiration ICPAES
1,1,1 - trichloroethane	8010 8240	Gas Chromatograph GC/MS
Tetrachloroethylene	8101 8270	Gas Chromatograph GC/MS
Trichloroethylene	8010 8270	Gas Chromatograph GC/MS

Notes: AA = Atomic Adsorption
ICPAES = Inductively Coupled Plasma Atomic Emission Spectroscopy
GC/MS = Gas Chromatography/Mass Spectrometry

This represents the most common contaminants detected in RI/FS analysis at the FEMP. A complete list of RCRA hazardous constituents and CERCLA hazardous substances is given in Appendix IX and the HSL.

Table 7-3 - Methods for Determining Radionuclide Concentrations

Radionuclide	Method
U-238	RSL-304
U-234	RSL-304 & RAD-0110
U-235	RSL-304 & RAD-0110
Th-230	RSL-304
Ra-226	RSL 309 & RAD-0065
Pb-210	RSL-315
Pa-231*	RSL-112 or calculate*
Ac-227	RSL-304
Sr-90	RSL-305
Tc-99	RSL-310
Cs-137	RSL-112
Ru-106	RSL-112
Np-237	RSL-7103
Gross Alpha	RSL-308
Gross Beta	RSL-308
Th-232	RSL-304
Th-228	RSL-304
Ra-228	RSL-309
Th-234	RSL-304 or calculate*

Notes: Method RSL-201 is a technique that is typically used to prepare radioactive samples for analysis.

RSL Procedures will be conducted in accordance with IT/RSL Radioanalytical Methodology and Procedures Manual.

RAD treatment methods can be referenced from the Fernald Laboratory Analytical Method.

*The FEMP laboratory prefers that concentrations of Pa-231 be calculated from U-235 activities, and that concentrations of Th-234 be calculated from U-238 activities.

7.7 Data Validation, Manipulation, and Management

Section 11 of the QAPjP will dictate how the analytical results are validated and reported.

The results that are provided by the laboratory will be statistically analyzed to determine if the soil and debris contain hazardous waste or are contaminated with CERCLA hazardous substances with respect to regulatory limits. Soil and debris will be assessed for radioactive contamination. A mean will be calculated for each contaminant and will be compared to the regulatory limit or 100 pCi/g concentration. Statistical analysis between the calculated mean value and the limit may be required to determine whether there is a significant difference at a 95 percent confidence level. A Students "t" test will be used to perform the statistical analysis. The analytical results will also be entered into the computerized database for record keeping and future risk analysis work.

SECTION 8

REFERENCES

The following references were reviewed while preparing the Removal Action Work Plan. Some of the references are cited for use in accordance with the work plan. These references are available from the FEMP upon request.

(PARSONS 1992) PARSONS, March 1992. Engineering Evaluation for Improved Storage of Soil and Debris, Removal Action 17.

(US EPA 1989) United States Environmental Protection Agency, 1989. *RSIC Computer Code Collection*. AIRDOS-PC, Oak Ridge National Laboratory.

(US EPA 1990) -----, September 1990. *Superfund LDR Guide #6A (2nd Edition) Obtaining a Soil and Debris Treatability Variance for Remedial Actions*. OWSER 9347.3-06FS.

(US EPA 1991) United States Environmental Protection Agency - Region V, 1991. *U.S. Department of Energy, Feed Materials Production Center, Fernald, Ohio (OHG 890 008 976), Consent Agreement as Amended Under CERCLA Sections 120 and 106(a)*. Administrative Docket Number: V-W-90-C-057.

(WEMCO 1991a) Westinghouse Environmental Management Company of Ohio, October 22, 1991. *Completing the Material Evaluation Form*. SSOP-0002.

(WEMCO 1991b) -----, 1991. *Fernald Environmental Management Project Sitewide Quality Assurance Project Plan.*

(WEMCO 1991c) -----, August 23, 1991. *FEMP Lot Marking and Color Coding System.*

(WEMCO 1991d) -----, December 6, 1991. *Removal Site Evaluation - Improved Storage of Soil and Debris.*

(WEMCO 1991e) -----, November 27, 1991. *Controlling the Generation of Construction/ Maintenance Waste*. SSOP-0044I.

(WEMCO 1992a) -----, January 22, 1992. *Radiological Contamination Surveys*. SP-P-35-023.

(WEMCO 1992b) -----, March 4, 1992. *Sitewide CERCLA Quality Assurance Project Plan.*

ATTACHMENT 1

REMOVAL SITE EVALUATION

REMOVAL SITE EVALUATION

for the

IMPROVED STORAGE OF SOIL AND DEBRIS

Fernald Environmental Management Project

Fernald, Ohio

Introduction

This Removal Site Evaluation is presented to assist the lead agency in determining the necessity for a removal action to address the potential threat of a release affected by the storage of soil and debris at the Fernald Environmental Management Project (FEMP).

Source Term

Storage of contaminated soil and debris presents a potential threat of a release. The soils and debris generated at the FEMP are typically contaminated with CERCLA regulated hazardous substances. The potential exists for the migration of airborne or waterborne contaminants from soil and debris stockpiles to the surrounding environment. Weather conditions and or physical movement of the soils and groundwater on or by personnel and equipment are the potential causes of this migration.

Evaluation of the Magnitude of the Potential Threat

The magnitude of the potential threat of migration of contamination from the soil and debris is significant. Surface runoff could potentially carry significant amounts of contaminants from soil and debris stockpiles into surface runoff structures or into the area groundwater. Wind conditions could create airborne particulates which have a widespread potential for migration. In an attempt to significantly reduce this potential threat, a course of action is being undertaken which will significantly improve the soil and debris handling and storage methods at the FEMP.

Assessment of the Need for a Removal Action

Consistent with Section 40 CFR 300.65 of the National Contingency Plan, the Department of Energy (DOE) shall determine the appropriateness of a removal action. Eight factors to be considered in this determination are listed in 40 CFR 300.65 (b) (2). The following apply specifically to improvement of soil and debris storage methods:

<u>40 CFR 300.65 (b) (2) (i)</u>

Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations, animals, or food chain.

<u>40 CFR 300.65 (b) (2) (ii)</u>

Actual or potential contamination of drinking water supplies or sensitive ecosystems.

<u>40 CFR 300.65 (b) (2) (v)</u>

Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

Appropriateness of a Response

If it is determined that a response is appropriate due to the potential for contaminant migration, a removal action may be required to address the situation. If a planning period of less than six months exists prior to initiation of a response action, DOE will issue an Action Memorandum. This Action Memorandum will describe the selected response and provide supporting documentation for the decision.

If it is determined that there is a planning period greater than six months before a response is initiated, DOE will issue an Engineering Evaluation/Cost Analysis (EE/CA) Approval Memorandum. This memorandum is to be used to document the threat to public health and the environment. It will also serve as a decision document to be included in the Administrative Record.

ATTACHMENT 2

TABLE OF ARARs

ATTACHMENT 2
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Improved Storage Structures - Aisle Space	All personnel must have immediate access to emergency communication or alarm systems whenever hazardous waste is being handled at the facility. Aisle space must be sufficient to allow unobstructed movement of personnel, fire and spill control, and decontamination equipment. 40 CFR 264.34 and 264.35 {OAC 3745-34 and 35} [Applicable]	Alarm systems will be present at the administrative trailer for the Central Storage Facility. The floor plan of the improved storage facilities (containment structures) will allow for sufficient aisle space. In-place structures will be provided with access roadways around the perimeters of the structures
Improved Storage Structures - Containment	The storage area must have a containment system that is designed and operated to drain and remove accumulated liquids (i.e., slope containment area, elevate or protect containers from contact with accumulated liquids). If the storage area is used to store containers holding free liquids or F020, FO21, F022, F023, F026, or F027 (liquid or solid), the containment system must also: (1) be free of cracks and gaps and be sufficiently impervious to contain accumulated liquids until they are removed, (2) have a capacity to contain the larger of either 10% of the volume of the containers which hold free liquids or the volume of the largest container which holds free liquids, (3) prevent runon from entering the containment system unless it has sufficient capacity to accommodate any runon which may enter the containment area, and (4) be operated to remove accumulated liquids in a timely manner to prevent overflow of the collection system. 40 CFR 264.175 {OAC 3745-55-75} [Applicable]	Containers holding F020, F021, F023, F026, or F027 listed hazardous waste will not be stored in the improved storage facilities. However, the improved storage facilities will be designed to comply with these containment provisions. The containment structures will have an impervious diked foundation which slopes to a sump. A portable pump will be provided to remove any collected liquid. Both the containment and in-place structures will have berms or site grading to prevent runon from entering the facilities.
Improved Storage Structures - Final Closure	At closure, all hazardous waste and residues must be removed from the containment system. Contaminated structures, liners, bases, waste containers, and soils must be removed or decontaminated. 40 CFR 264.178 and 264.258 {OAC 3745-55-78 and 3745-56-58} [Applicable]	Provisions for waste removal, decontamination, and facility closure will be identified as part of the final remediation program for OU-3.

ATTACHMENT 2
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Improved Storage Structures - Security Fencing	A physical barrier (e.g., fence) or 24-hour surveillance system must be provided to control the unknowing or unauthorized entry of persons or livestock onto the active portion of the storage facilities. Signs (legible from a distance of 25 feet) must be posted at each entrance to the active portion and at other locations as required by 40 CFR 264.14(c). 40 CFR 264.14 {OAC 3745-54-14} [Applicable]	The fence surrounding the FEMP is adequate to restrict access to the improved storage facilities. Warning signs (indicating the potential presence of hazardous waste) will be posted at each entrance in the improved storage facility.
Improved Storage Structures- Siting (Endangered Species)	The removal action shall mitigate any adverse impact which may affect the continued existence of any endangered species or threatened species. The removal action shall also not result in the destruction or adverse modification of a critical habitat. Endangered Species Act 16 USC 1531 [Applicable]	There are no federally listed threatened or endangered species at the FEMP or its immediate vicinity. Therefore, neither notification nor mitigative measures are required for this removal action (Initial Screening of Alternatives for OU-5, December 1991).
Improved Storage Structures - Siting (Historic Sites)	The Secretary of the Interior must be notified in writing whenever DOE finds or is notified in writing by an appropriate historical or archaeological authority that the activities in connection with a project may cause irreparable loss or destruction of significant scientific, prehistorical, historical, or archaeological data. National Historic Preservation Act, 16 USC 470 [Applicable]	There are no known sites of historical or archaeological significance at the FEMP. Therefore, neither notification nor mitigative measures are required for this removal action (Initial Screening of Alternative for OU-5, December 1991).

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Improved Storage Structures - Siting (Floodplains and Wetlands)	Storage facilities are not to be located in a 100-year floodplain unless the storage facilities are designed, constructed, operated, and maintained to prevent wash-out of any hazardous waste. 40 CFR 264.18(b) {OAC 3745-54-18(b)} [Applicable] Adverse impacts to floodplains and wetlands are to be avoided. If it is necessary to locate an improved storage facility within a floodplain or wetland, the impacts must be minimized. A floodplain or wetland assessment must be published in the Federal Register prior to taking any action within the floodplain/wetland to allow time for public review and comment. 10 CFR 1022 [Applicable] Federal agencies are to avoid construction within a floodplain or wetland unless there are no practicable alternatives and all practicable measures are included in the construction project to minimize any impacts to the floodplain or wetland. A public notice (with prescribed contents) and opportunity for public comment provided. Executive Orders 11988 and 11990 [To Be Considered]	Jurisdictional wetlands occupy areas along the railroad on the north side of the FEMP, along Paddy's Run, and in several drainage ways. These areas, as well as those within a 100-year floodplain, will be avoided in siting any storage facilities.
Improved Storage Structures - Siting (Seismic)	Storage facilities for hazardous waste shall not be located within 200 feet of a fault which has had displacement in the Holocene time. 40 CFR 264.18(a) {OAC 3745-54-18(a)} [Applicable]	The FEMP is not located in political jurisdictions identified in 40 CFR 264, Appendix VI. As allowed by 40 CFR 264.18(a), facilities not listed in Appendix VI are assumed to be in compliance with this seismic requirement.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Improved Storage Structures - Waste Piles (In Place)	Any hazardous waste pile that is inside or under a structure that provides protection from precipitation, is not subject to the waste pile design requirements (40 CFR 264.251) or groundwater monitoring requirements (40 CFR 264, Subpart F), provided that: 1) Liquids or materials containing free liquids are not placed in the pile, 2) The pile is protected from surface water runon 3) Wind dispersal is controlled by means other than wetting, and 4) Leachate will not be generated through decomposition or other means. 40 CFR 264.250 {OAC 3745-56-50} [Applicable]	All hazardous waste will be placed inside an improved storage structure. Bulk liquids and bulk materials containing free liquids will not be placed within in-place containment structures. The improved storage facility will have a curb/barrier around the entire base of the facility to prevent runon. Wind dispersal will be controlled by the enclosed building and closing of access doors when required. The soil and debris will not contain any material which will generate leachate through decomposition.
Improved Storage Structures - (Central Storage Facility)	Any hazardous waste pile that is inside or under a structure that provides protection from precipitation, is not subject to the waste pile design requirements (40 CFR 264, Subpart F) provided that: 1) Liquids or materials containing free liquids are not placed in the pile, 2) The pile is protected from surface water runon, 3) Wind dispersal is controlled by means other than wetting, and 4) Leachate will not be generated through decomposition or other means. Waste piles under a structure that provides protection from precipitation so that neither runoff nor leachate is generated is not subject to regulation under 40 CFR 264.251 or under Subpart F of this part, provided that: 1) Liquids or materials containing free liquids are not placed in the pile, 2) The pile is protected from surface water runon by the structure or in some other manner, 3) The pile is designed and operated to control dispersal of the waste by wind, where necessary, by means other then wetting, and 4) The pile will not generate leachate through decomposition or other reactions. 40 CFR 264.250 and 264.251 {OAC 3745-56-50} [Applicable]	All hazardous waste will be placed into the Central Storage Facility. Bulk liquids and bulk materials containing free liquids may be placed in the Central Storage Facility also. The Central Storage Facility will have a curb/barrier around the entire base of the facility to prevent runon. Wind dispersal will be controlled by the enclosed building and closing of access doors when required. The concrete floor will be designed as a liner with leachate collection.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Improved Storage Structures - Asbestos Handling	Asbestos waste generated must be disposed in accordance with OAC 3745-20-06. No visible emissions during the collection, processing, packaging, transporting, or disposition of any asbestos-containing waste material. Waste material shall be sealed into durable leak-tight disposal containers or an approved alternative disposal system. Containers must be labeled in accordance with this section OAC 3745-20-06 [Applicable]	The Central Storage Facility will accept friable and nonfriable asbestos. One of the methods below will be used if the material contains friable asbestos. 1) Adequately wet asbestos-containing waste material and seal the material into durable lead-tight disposal containers or enclosure system in accordance with Paragraph (C) 3745-20-04. 2) For facilities demolished in accordance with Paragraph (A)(1)(a) of Rule 3745-20-04 or Paragraph (C) of Rule 3745-20-04 of the Ohio Administrative Code, where asbestos was not removed prior to dismantling, keep asbestos-containing dismantling debris adequately wet or encapsulated until collected for disposal. 3) Process friable asbestos-containing waste material into nonfriable forms, such a nonfriable pellets or other shapes.
Management Plan-General	Hazardous and mixed waste management activities shall be implemented according to the DOE hazardous waste management procedures for facilities operated under the authority of the Atomic Energy Act of 1954, as amended. DOE Order 5480.2 [To Be Considered] Management of contaminated debris shall be in accordance with the provisions of the proposed rule for Land Disposal Restrictions for Newly Listed Wastes and Contaminated Debris. 40 CFR 260.10 and 264, Subpart DD (57 FR 958) [To Be Considered]	All design activities shall be implemented according to the DOE hazardous waste management procedures. Work Plan will incorporate the proposed management requirements for contaminated debris. Also, the use of "containment buildings", as proposed by this rule, have been incorporated.
Management Plan-PCB-contaminated Material	PCB-contaminated material will be managed in accordance with 40 CFR 761 40 CFR 761 [Applicable]	Procedures to manage PCB-contaminated material are located in Section 3.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Management Plan-Petroleum-Contaminated Material	Petroleum-contaminated material will be managed in accordance with OAC 1301:7. OAC 1301:7 [Applicable]	Procedures to manage petroleum-contaminated material are located in Section 3.
Management Plan - Ignitable, Reactive, and Incompatible Waste	Ignitable and reactive waste must be separated and isolated from sources of ignition or reaction according to 40 CFR 264.17(a). Containers with ignitable or reactive waste must be located at least 50 feet from the FEMP property boundary. Ignitable waste cannot be placed on the waste pile unless: 1) 40 CFR 268 is complied with, and 2) The ignitable and reactive characteristics are eliminated and the provisions of 40 CFR 264.17(b) are met, or the waste is managed to prevent ignition or reaction. Precautions shall be taken to ensure that incompatible wastes are not mixed together which could cause any of the conditions identified in 40 CFR 264.17(b). Incompatible materials must be separated from each other by distance, or a dike, berm, wall, or other device. 40 CFR 264.17, 264.176, 264.177, 264.256, and 264.257 {OAC 3745-54-17, 3745-55-76 and 77, and 3745-56-56 and 57} [Applicable]	Waste segregation will be based upon process knowledge and/or characterization information. It is expected that all of the soil and debris wastes will neither be ignitable, reactive, or incompatible. Any waste which is suspected of being ignitable or reactive will not be placed into an improved storage structure. The guidelines identified in 40 CFR 264 Appendix I will be followed to ensure that incompatible wastes are not mixed together.
Management Plan - Land Disposal Restrictions (Disposal)	No restricted hazardous waste shall be placed into a land disposal unit unless the waste is treated or a variance is provided in accordance with the provisions of 40 CFR 268. 40 CFR 268 {OAC 3745-59} [Applicable] The concept of areas of contamination for CERCLA sites will be utilized for handling of soil and debris containing hazardous substances. EPA Superfund LDR Guide #5 and NCP preamble [To Be Considered]	DOE is requesting a CERCLA ARAR waiver in accordance with 40 CFR 300.415(i). The justification for the waiver is contained in Section 5 of the RAWP. The concept of areas of contamination is being proposed as a method to effectively handle contaminated soil and debris at the FEMP until the soil and debris are remediated pursuant to the Record of Decision.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Management Plan - Land Disposal Restrictions (Storage)	Except as provided in Section 40 CFR 268.50, the storage of a restricted hazardous waste beyond one year is prohibited. 40 CFR 268.50 {OAC 3745-59-50} [Applicable]	DOE is requesting a CERCLA ARAR waiver in accordance with 40 CFR 300.415(i). The justification for the waiver is contained in Section 5 of the RAWP.
Management Plan - Land Disposal Restrictions (Dilution)	A restricted waste or the residue from the treatment of a restricted waste shall not be diluted in any way to achieve compliance with the required LDR treatment standards. 40 CFR 268.3 {OAC 3745-59-03} [Applicable]	Soil and debris stored in improved storage facilities will be remediated in accordance with the method specified in the Record of Decision.
Management Plan - Off-site Transport	Any generator who transports hazardous waste for off-site treatment, storage, or disposal must use a manifest to track and record each waste shipment. 40 CFR 262, Subpart B {OAC 3745-52-20 to 23} [Applicable] Before transporting, a hazardous waste must be packaged, labelled, marked, and placarded in accordance with 40 CFR 262.30 to 33 and applicable Department of Transportation regulations (49 CFR Parts 172, 173, 178, and 179) 40 CFR 262.30 to 262.33 {OAC 345-52-30 to 33} [Applicable]	As required by Section IX.E of the Consent Agreement, all materials removed from the FEMP will be managed in compliance with applicable provisions of RCRA and other Federal and State requirements, including the US EPA's Off-Site Policy (Revised Procedures for Planning and Implementing Off-Site Response Action - Interim Policy, from J. Winston Porter, dated November 13, 1987). For any hazardous waste shipped off site, the applicable RCRA and DOT transportation regulations will be met.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Management Plan - Residual Contamination	The management and free release of wastes, residues, structures, equipment, and other property shall adhere to the radiological protection requirements and guidelines described in DOE Order 5400.5. DOE Order 5400.5, Chapter IV [To Be Considered] Remedial actions shall be conducted so as to provide reasonable assurance that the residual radioactivity in any occupied or habitable building, the annual average (or equivalent) radon decay product concentration (including background) shall not exceed 0.02 WL. In any case, the average shall not exceed 0.03 WL. The level of gamma radiation shall not exceed the background level by more the 20 microroentgens per hour. Guidance for implementation of this standard and criteria for establishing alternative limits are described in 40 CFR 192, Subpart C. 40 CFR 192, Subparts B and C [Relevant and Appropriate] Remedial actions shall be conducted so as to provide reasonable assurance that the residual radioactivity of the soil shall have a concentration of Ra-226, in land greater than 100 m^2, less than 5 pCi/g above background averaged over the first 15 cm of soil and 15 pCi/g above background averaged over each 15 cm-thick soil layer which is more than 15 cm below the surface. Guidance for implementation of this standard and criteria for establishing alternative limits are described in 40 CFR 192, Subpart C. 40 CFR 192, Subparts B and C [Relevant and Appropriate] A reasonable effort shall be made to eliminate residual contamination and to achieve the acceptable surface contamination levels as stated in the US NRC Regulatory Guide 1.86. US NRC Regulatory Guide 1.86 [To Be Considered]	Radiation surveys will be performed prior to releasing any potentially contaminated materials off site to demonstrate compliance with the specified standards. These surveys should show compliance averaged over limited areas rather than point-by-point compliance. Procedures for the measurement of gamma radiation exposure rates above and below the surface shall be based on realistic radium distributions near the surface.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Management Plan - Waste Analysis	Detailed chemical and physical analysis of a representative sample must be obtained prior to storage of any waste. A Waste Analysis Plan (WAP), specifying the sampling and analytical procedures, and rationale and frequency for analysis, must be prepared in accordance with 40 CFR 264.13. 40 CFR 264.12 {OAC 3745-54-13} [Applicable]	The FEMP will assess the contaminants within soil and debris by examining both the RI/FS database and process/historical records. If this information is not sufficient for waste characterization, then sampling and analysis will be performed to supplement the characterization effort. Attachment 2 provides guidance for sampling and analysis procedures.
Management Plan - Waste Determination	A person who generates a solid waste must determine if that waste is a hazardous waste using the procedures identified in 40 CFR 262.11 40 CFR 262.11 {OAC 3745-52-11} [Applicable]	Soil and debris will be assessed by the specific project for hazardous wastes by review of the RI/FS database, review of process/historical records, and sampling and analysis (as required). Attachment 2 provides a sampling and analysis plan to guide required characterization studies.
Operational - Air Discharges (Fugitive Dust)	The emission or escape into open air from any source whatsoever in such a manner or in such amounts as to endanger the health, safety, or welfare of the public or to cause unreasonable injury or damage to property shall be declared a public nuisance and is prohibited. OAC 3745-15-07 and ORC 3704.03(E) [Applicable] The significant and avoidable deterioration of air quality shall be prohibited. OAC 3745-17-05 [Applicable] For those communities and areas identified in OAC 3745-17-08, Appendix A, the visible emissions of fugitive dust generated during grading, loading, or construction operations and other practices which emit fugitive dust are to be minimized or eliminated. The FEMP is not within a community of area identified in Appendix A; however, the remedial construction activities may generate fugitive dust. As such, this requirement is deemed to be relevant and appropriate due to potential fugitive dust generation during construction activities. OAC 3745-17-08 [Relevant and Appropriate]	Visible emissions will be mitigated during construction using standard construction practices such as water sprays. Wind dispersal of the soil and debris piles will be controlled by the enclosed building and the closing of access doors when required. There will not be wind dispersal control mechanisms for the controlled stockpile because the dose-based risk assessment establishes a limit that is protective of human health and the environment.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Operational - Air Discharge (Radionuclides)	Emissions of radionuclides to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive, in any year, an effective dose equivalent of 10 mrem per year above background. This limit is based on an effective dose equivalent as calculated per the International Commission on Radiological Protection's Publication, No. 26. Modeling and sampling procedures are specified in 40 CFR 61.93. An annual report must be submitted to EPA headquarters and regional offices by June 30. This report includes the monitoring results, as recorded in DOE's Effluent Information System, and the effective dose equivalent calculation, as required by 40 CFR 61.93, for the previous year. Records, as specified under 40 CFR 61.95, must be maintained for at least 5 years. 40 CFR 61, Subpart H [Relevant and Appropriate] DOE Order 5820.2A, Chapter III.3.a.2 [To Be Considered]	Ambient air monitoring will be conducted at the FEMP using the existing sitewide monitoring stations and programs. The results of this monitoring program are provided to the US EPA on an annual basis. [Note: WEMCO-Environmental Compliance will propose this compliance strategy to the US EPA during FY92.]
Operational - Container Management	Containers of RCRA hazardous waste must be: 1) Maintained in good condition 2) Compatible with hazardous waste to be stored 3) Closed during storage (except to remove old waste) 4) Managed to prevent rupture 40 CFR 264.171 to 264.173 {OAC 3745-55-73} [Applicable]	Containers will be periodically inspected and records of these inspections will be kept.

ATTACHMENT 2
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Operational - Emergency Planning	The improved storage facilities must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release. Unless demonstrated otherwise, the following equipment must be provided: (1) an internal communications or alarm system, (2) telephone or two-way radio to summon emergency assistance, (3) portable fire extinguishers, spill control equipment, and decontamination equipment, and (4) water at adequate volume and pressure. Arrangements must be made with the local authorities to ensure proper emergency planning procedures. Procedures need to be consistent with existing arrangements. 40 CFR 264, Subpart C {OAC 3745-54-30 to 37} [Applicable]	The existing sitewide internal communication/alarm system will be extended to the improved storage facility office trailer. The small office trailer will be provided to house administrative functions, which will be equipped with telephone service. Portable fire extinguishers will be provided on the material handling equipment to extinguish equipment fires. The existing sitewide spill control and decontamination equipment will be available to respond to any incidents. A fire sprinkler system will not be provided since uncontainerized ignitable and reactive waste will be prohibited; the soil and debris are expected to be nonflammable.
Operational - Emergency Planning	A Contingency Plan and Emergency Procedures are to be developed for the storage facilities in accordance with 40 CFR 264, Subpart D. The emergency procedures will include procedures for notifying off-site officials in the event of a situation which could threaten human health or the environment, as required by 40 CFR 264.56(d). 40 CFR 264, Subpart D, {OAC 3745-54-50 to 56} [Applicable]	The existing RCRA Part B Contingency Plan and Emergency Procedures will be followed for any hazardous waste release associated with the improved storage facilities.
Operational - Groundwater Monitoring	A detection groundwater monitoring program must be developed to ensure that the specified groundwater protection standard is not exceeded. The monitoring program is to consist of a list of monitoring parameters and associated limits, monitoring frequency, sampling and analytical procedures, and statistical evaluation procedures. Groundwater monitoring wells are to be provided at the point of compliance in sufficient numbers and locations to allow detection of contaminant migration from the facility into the uppermost aquifer. 40 CFR 264, Subpart F {OAC 3745-54-90 to 99} [Applicable]	The existing sitewide groundwater monitoring program will be used to ensure that the groundwater protection standard is not exceeded.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Operational - Inspections	The improved storage facility must be inspected to prevent an event which may cause the release of hazardous waste constituents to the environment or pose a threat to human health. The inspection items and frequencies are to be specified in an Inspection Plan. All inspections are to be recorded and maintained in an inspection log. Inspection items are to include: (1) testing and maintenance of emergency equipment (including facility communications, alarms, and decontamination equipment), (2) weekly inspections of the containers and containment system for leaks and deterioration and (3) proper functioning of runon controls. 40 CFR 264.15, 264.33, 264.174, and 264.254 {OAC 3745-54-15, 3745-54-33, 3745-55-74, and 3745-56-54} [Applicable]	The Inspection Plan for the Improved Storage Structures is presented in Section 3. All requirements on these provisions have been included in this plan.
Operational - Public Health and Environment	The total effective dose equivalent to members of the public is limited to 100 mrem in a year, exclusive of the disposal for radioactive material into sanitary sewage in accordance with 10 CFR 20.2003. The dose in unrestricted areas in limited to 2 mrem in 1 hour. 10 CFR 20 Subpart D [Relevant and Appropriate] Operations must be in accordance with the requirements of DOE Order 5400.5, Chapter II involving DOE public dose limit for all exposure modes and DOE sources of radiation. DOE Order 5400.5, Chapter II.1.a [To Be Considered]	The improved storage facilities will be designed and operated to minimize the release of radionuclides. The radiological discharges will be estimated in order to qualitatively determine the impact of the facility upon the off-site residents. Compliance will be demonstrated by sitewide environmental monitoring (including air, soil, and groundwater). Reports summarizing the sitewide monitoring results will be submitted annually to the EPA.
Operational - Radiation Protection	All items that reasonably demonstrate technology added to the system sequentially and in order of diminishing cost-benefit return, can be shown to have a favorable cost-benefit ratio effect reductions in dose to the population within a 50-mile radius. The value of $1,000/person-rem and $1,000 per person-thyroid-rem (or lesser value as may be appropriate) shall be used in the cost-benefit analysis. 10 CFR 50, Appendix I [Relevant and Appropriate]	The cost-benefit of improved storage versus the controlled stockpile storage will be assessed in the risk assessment. The risk assessment will ensure that the radionuclide concentrations in the uncontrolled stockpile will have a cost-benefit ratio of $1,000 per person-rem or greater.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Operational - Records	An operating record must be written and maintained until closure of a hazardous waste storage facility. The operating record is to include the following reports: (1) storage records (type, quantity, location, manifest number, dates, and storage method) for each waste shipment, (2) waste analysis, (3) contingency plan incidents, (4) inspection reports, (5) groundwater monitoring results, (6) annual waste minimization certificate, (7) LDR waste analysis certification, and (8) training records. The operating record is to be available for on-site inspection by US EPA/Ohio EPA. A biennial report is to be submitted to US EPA/Ohio EPA in accordance with 40 CFR 264.75. 40 CFR 264, Subpart E {OAC 3745-54-73 to 77} [Applicable] Record keeping must be performed according to DOE Order 5820.2A which specifies that records must be maintained from generation through final disposal. The specific data requirements are physical/chemical characteristics, quantity of radionuclides, waste volume, and other data necessary to demonstrate compliance with waste acceptance criteria. DOE Order 5820.2A Chapter III.9m [To Be Considered]	Current FEMP procedures for preparing and maintaining these operating records will be followed.
Operational - Records	Generators must keep copies of the following documents for 3 years: 1) Manifests 2) Biennial and exception reports 3) Test results, waste analyses, or other determination made in accordance with 40 CFR 262.11 Generators must submit biennial reports by March 1 of each even numbered year. Generators must submit exception reports within 35 days of shipment. 40 CFR 262, Subpart D {OAC 3745-52-40-42} [Applicable]	Current FEMP procedures for preparing and maintaining these operating records will be followed.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Operational - Stormwater Monitoring	Industrial facilities (as defined in 40 CFR 122.26) are required to submit a NPDES Stormwater Discharge Permit Application to the US EPA by October 2, 1992. This permit application is to identify the sitewide monitoring program (including monitoring parameters and locations) for all stormwater discharges. 40 CFR 122.26 [Applicable]	The stormwater resulting from the improved storage facilities will be monitored in accordance with the monitoring program being established pursuant to the sitewide NPDES Stormwater Discharge Permit Application.
Operational - Worker Training	All storage facility personnel must be trained within 6 months from their date of hire or reassignment, and participate in annual reviews. The training requirements are to be specified in a Training Plan. Employees hired after April 15, 1981, are not to work unsupervised unless the requirements of OAC 3745-54-16(A) are fulfilled. 40 CFR 264.16 {OAC 3745-54-16} [Applicable]	Employees who will operate the improved storage facilities will receive the required training.
Operational - Worker Protection (Hazardous Substances)	Employers shall develop and implement a written safety and health program for their employees involved in hazardous waste operation. All occupational safety and health requirements of 29 CFR Parts 1910 and 1926 are to be followed. If there is a conflict or overlap, the most protective provision shall apply. 29 CFR 1910.120 [Relevant and Appropriate]	This removal action will be conducted in accordance with the provisions of the FMPC site Health and Safety Plan (WEMCO, June 1990). As required to 29 CFR 1910.120(b)(4), a task-specific health and safety plan will be developed for this removal action.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Operational - Worker Protection (Radiation)	The occupational radiation doses specified in 10 CFR 20, Subpart C, shall be followed. Although the radiation protection standards promulgated under 10 CFR 20, Subpart C, are only applicable to NRC licensed facilities, these protection standards are deemed to be relevant and appropriate for individuals entering a radiologically controlled area at the FEMP. Radiation surveys and monitoring will be provided, with the appropriate records kept. Also, control of access to areas of radiation will be implemented. Persons in controlled areas will be provided respiratory protection, if necessary. Reports of exposures, radiation levels, and concentrations of radioactive material exceeding the limits will be kept. These standards are mandatory after January 1, 1993, with early compliance encouraged. 10 CFR 20, Subparts C, F, G, H, L, and M [Relevant and Appropriate] At DOE facilities, the radiation protection standards contained in DOE Order 5480.11 for occupational workers, unborn children, minors, and on-site members of the public shall not be exceeded. DOE Order 5480.11 [To Be Considered]	The existing FEMP radiation protection program is being implemented under DOE Order 5480.11. This program is consistent with the requirements of 10 CFR 20. Occupational workers and on-site members of the public shall be required to wear dosimeters and personal protection equipment when entering a radiologically controlled area. Radiation monitoring shall also be required for all individuals exiting a radiologically controlled area. Details regarding the personal protection and radiation monitoring requirements will be identified in the task-specific health and safety plan developed for this removal action.

ATTACHMENT 3

IDENTIFICATION OF SOIL AND DEBRIS SOURCES QUANTITIES

The following tables identify the soil and debris that had accumulated at the time that the Removal Action Work Plan was prepared, and estimates future sources and quantities of additional soil and debris. This information was used for planning purposes with respect to identifying the number of improved storage facilities and estimating their required size. Additional improved storage facilities will be constructed in the future as required to store additional soil and debris.

ATTACHMENT 3

CHARACTERIZATION TABLE FOR FUTURE SOURCES OF SOIL AND DEBRIS

GENERATOR (OU, FEMP Area, Project, etc.)	LOCATION (By AOC)	MATERIAL (Soil, Concrete, etc.)	CLASSIFICATION (Haz, LLRW, Mixed)	START-END DATE	VOLUME (cu. yd.)	DESTINATION (ASSUMED)	NOTES
Utilities Life Extension/Tank Farm	C	Soil	Category I	(3/92-9/93)	250	CSF	
		Piping	Clean		1	SMP	Assume 1 ft depth
		4 Motors for cooling water pump	LLRW		n/a	DFP	
		Wood shoring	Clean			CSF	
		Boiler	Asbestos		n/a	DFP	
Maintanence	C	Soil	Category II	(10/91-9/92)	350	CSF	
Process Water Break Tank	C	Soil		(7/91-12/91)	89	CSF	
		Rubble(concrete, block, etc.)			7	CSF	
Storm Sump for Decon Pad	C	Soil	Category I	(3/92-5/92)	1,131	CSF	
		Soil	Mixed(Catagory III)		59	CSF	
Sidewalk Replacement	C	Soil	Mixed(Catagory III)	(3/92-4/92)	7	CSF	
Clean Scrap Metal Storage Pad	C	Soil	Category II	(8/91-8/92)	20	CSF	
		Concrete/Asphalt/Masonry	Clean		5	CSF	
RCRA Closure Bulk Storage Tanks	C	Soil	Category II	(10/91-8/92)	2	CSF	
		Concrete/Asphalt/Masonry	Mixed		1	CSF	
		Miscellaneous Metals/Equipment	Mixed		3	SMP	
Fuel Storage Tank Facility	C	Soil	Clean	(1/92-4/92)	297	CSF	
		Rubble(concrete, block, etc.)	Clean		4	CSF	
Dock Leveler at the New	C	Soil	Clean	(1/92-3/92)	19	CSF	
Receiving Facility (RIMIA)		Concrete	Clean		8	CSF	
Guard Posts for Sampling Well	C	Concrete	Contaminated	(9/90-11/90)	1	CSF	
Plant 8 Sump	C	Soil	Category II	(8/92-12/94)	131	CSF	
		Concrete/Asphalt/Masonry	LLRW		249	CSF	
		Structural Steel	LLRW		3	SMP	Assume steel=490 pcf
		Gypsum, Plastic, Glass	Clean		2	CSF	
		Asbestos	LLRW(Asbestos)		58	CSF	Assume 1 ft depth
		Process Piping and Grates	LLRW		1	SMP	Assume steel=490 pcf
		Wiring, Conduit	LLRW		60	CSF	
Duplex Office Trailers	C	Soil	Category II, III	(10/91-1/92)	415	CSF	
		Concrete/Asphalt/Masonry	LLRW		5	CSF	
EPA/Parsons Office Trailers	C	Soil	Category I, II	(9/91-4/92)	17	CSF	
		Concrete/Asphalt/Masonry	Clean		2	CSF	
FEMP Firing Range	A	Lead	Clean		9	CSF	Assume Pb=710 pcf
Plant 8 Storage Pad (West)	C	Soil	Category I, II	(3/93-1/94)	208	CSF	
		Soil	Category III		86	CSF	
		Concrete/Asphalt/Masonry	LLRW		9	CSF	
		Structural Steel	LLRW		4	SMP	1712 lbs.
		Asbestos	LLRW(Asbestos)			CSF	250 lf

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ATTACHMENT 3 (continued)

CHARACTERIZATION TABLE FOR FUTURE SOURCES OF SOIL AND DEBRIS

GENERATOR (OU, FEMP Area, Project, etc.)	LOCATION (By AOC)	MATERIAL (Soil, Concrete, etc.)	CLASSIFICATION (Haz, LLRW, Mixed)	START-END DATE	VOLUME (cu. yd.)	DESTINATION (ASSUMED)	NOTES
Plant 8 Storage Pad (East)	C	Soil	Category I	(3/93-1/94)	160	CSF	
		Soil	Category III		57	CSF	
		Concrete/Asphalt/Masonry	LLRW		8	CSF	
		Structural Steel	LLRW		7	SMP	2990 lbs.
		Asbestos	LLRW(Asbestos)			CSF	600 lf
Plant 1 Pad TSS	C	Wood Products	Hazardous			CSF	6 light and 1 FSO Box
Truck Loading Dock	C	Concrete/Asphalt/Masonry	Mixed		36	CSF	
		Fencing	Mixed			SMP	20 lf
Water Treatment Replacement	C	Piping	Clean	(10/91-10/92)		SMP	120 lbs.
		Soil	Clean		1	CSF	
Manhole #34 Spill Control	C	Soil	Clean	(5/91-9/91)	1	CSF	
		Soil	Contaminated		1	CSF	
Building #30 Ladies Restroom	C	Electrical Conduit and Wire	Contaminated			CSF	26 lf
		Asbestos	Contaminated		4	CSF	
Plant 7 D & D	C	Transite Siding				CSF	
UNH Tank Removal	C					CSF	
Sewage Treatment Plant	C					CSF	
Plant 1 Pad Closure	C					CSF	
Waste Pit 5 ETF Removal Action	B					CSF	
UST Removal	C	Soil	Petroleum contaminated		4,000	CSF	
Waste Pit Runoff Control	B					CSF	
			TOTAL:		7,788		

NOTES: OU4 soils (6000 cy) are from remedial activities, not removal actions which may or may not require storage in an improved storage structure.
Classification of LLRW is based on FMPC-720 (now SSOP-0044I).
Total columns do not include estimate for unknowns (blank spaces).
If classified as LLRW, the following categories apply:
Category I = < 35 pCi/g
Category II = 35-100 pCi/g
Category III = > 100 pCi/g

DESTINATION CODES

IN-PLACE STRUCTURES
SRPC = Soil and Rubble Pile
SMP = Scrap Metal Pad
CONTAINMENT STRUCTURES
DFP = Decontamination Facility Pad
CSF = Central Storage Facility
(This option also includes the controlled stockpile for soils)

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ATTACHMENT 3 (continued)

CHARACTERIZATION TABLE FOR CURRENT SOIL AND DEBRIS SOURCES

GENERATOR (OU, FEMP Area, Project, etc.)	LOCATION (By AOC)	MATERIAL (Soil, Concrete, etc.)	CLASSIFICATION (Haz, LLRW, Mixed)	VOLUME (cu. yd.)	DIMENSIONS (LxWxH, ft)	DESTINATION (ASSUMED)	NOTES
Plants 2/3 (East)	C	Soil		4	5 x 5 x 4	CSF	Not coverd
Bldg. 71 (South)	C	Soil		408	51 x 36 x 6	CSF	Tarp covered
Truck Dock (S.W.)	C	Soil		10	8 x 8 x 4	CSF	Not covered,back fill spread, Water line leak
Pilot Plant (S.W.)	C	Soil	Category I	719	154 x 18 x 7	CSF	Tarp coverd, to be boxed
Lab near Bldg. 80 (N.W.)	C	Soil		234	84 x 15 x 5	CSF	Tarp covered
Plant 8 Center (South)	C	Soil		11	12 x 6 x 4	CSF	Not covered
Plant 8 Center (South)	C	Soil		9	10 x 8 x 3	CSF	Not covered
Plant 8 (S.E.)	C	Soil		327	84 x 15 x 7	CSF	Tarp covered
Plant 5 (N.W.)	C	Soil	Mixed (Category III)	550		CSF	Some grass/weeds, uncovered, to be boxed
Plant 9 (N.E.)	C	Soil		103	22 x 21 x 6	CSF	Not covered
Boiler Plant (West)	C	Soil		907	204 x 30 x 4	CSF	Tarp covered
Butler Bldg. (NE)	C	Soil		4,000		CSF	UST, Tarp covered
Butler Bldg. on 3rd St. (NW)	C	Soil and Debris	Category II	75,200	423 x 240 x 20	SRPC	Grass, weeds; covered. This is the only pile to remain in place.
Butler Bldg. on 3rd St. (NW)	C	Soil		540	90 x 54 x 3	CSF	Straw and grass; uncovered
Soil Pile (W of RR tracks)	B	Soil	Category I	4,400	300 x 132 x 3	CSF	Clean dirt–weeds; uncovered
Soil Pile (E of RR tracks)	C	Soil and Debris		20,097	609 x 297 x 3	--	Seeded; currently being dispositioned
Lab near Bldg. 65 (W)	C	Soil		2,800	63 x 60 x 20	CSF	Covered w/ sod; to stay until Thorium is removed
Lab Bldg. (SW)	C	Soil	Category I	142	51 x 15 x 5	CSF	Uncovered
Plant 6 (NE)	C	Soil		26	21 x 11 x 3	CSF	Covered with plastic
Plant 6 (E)	C	Soil		14	19 x 10 x 2	CSF	Covered with plastic
Bldg. 46 (N)	C	Soil		23	22 x 14 x 2	CSF	HWMU–UST; covered with plastic
			TOTAL:	110,524			

NOTES: Classification of LLRW is based on FMPC–720 (now SSOP–0044I).
Total columns do not include estimate for unknowns (blank spaces).
If classified as LLRW, the following categories apply:
Category I = < 35 pCi/g
Category II = 35–100 pCi/g
Category III = > 100 pCi/g

DESTINATION CODES

IN–PLACE STRUCTURES
SRPC = Soil and Rubble Pile
SMP = Scrap Metal Pad
CONTAINMENT STRUCTURES
DFP = Decontamination Facility Pad
CSF = Central Storage Facility
(This option also includes the controlled stockpile for soils)

114

3049

ATTACHMENT 4

COMPLETING THE MATERIAL EVALUATION FORM

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT COMPANY OF OHIO SITE DOCUMENT PROGRAM		SITE STANDARD OPERATING PROCEDURE Page 1 of 18
Title: COMPLETING THE MATERIAL EVALUATION FORM		DOCUMENT NO: SSOP-0002 REVISION NO. 3
Authorization: W. H. Britton, President	Supersedes: None	Issue Date: 10-22-91

NON-CONTROLLED COPY

1.0 PURPOSE

The purpose of this document is to provide the procedure for completing the Material Evaluation Form (MEF) to classify material as RCRA or NON-RCRA.

2.0 APPLICABILITY

This procedure shall apply to the classification of raw, process, excess, and waste material.

3.0 RESPONSIBILITIES

3.1 The Material Generator shall be responsible for the following:

3.1.1 Completing Section I, with input from IRS&T, of the Material Evaluation Form.

3.1.2 Maintaining a copy of the completed MEF for each generated stream.

3.1.3 Determining if a prior MEF has been submitted.

3.1.4 Completing a new MEF if changes occur to a previously evaluated material stream.

3.2 Facilities and Materials Evaluation (F&ME) shall be responsible for the following:

3.2.1 Completing Section II of the MEF per this procedure.

3.2.2 Determining that sufficient information exists to classify material as RCRA or NON-RCRA.

3.2.3 Recommending to Environmental Monitoring additional information that is required to complete a RCRA determination.

3.2.4 Maintaining the original of the completed form on file.

3.2.5 Establishing a primary and alternate contact within F&ME responsible for replying to inquiries on the completing and utilization of the Material Evaluation Form.

3.3 Environmental Engineering shall be responsible for the following:

3.3.1 Completing Section III of the MEF per this procedure.

DEC 1991

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3.0 RESPONSIBILITIES (cont.)

3.3.2 Maintaining a record of the completed form.

3.4 Material Control and Accountability (MC&A) shall be responsible for the following:

3.4.1 Retaining a record copy of Section IV for each Material Evaluation Number.

3.4.2 Maintaining a listing that relates inventory numbers to the Material Evaluation Number.

3.4.3 Assisting Material Generator in maintenance of Material Evaluation files and tracking the Material Evaluation form.

3.5 Facilities & Warehousing (F&W) shall be responsible for the following:

3.5.1 Providing a Material Evaluation Number to generator upon request.

3.5.2 Maintaining a log of Material Evaluation Numbers.

3.5.3 Retaining a record copy of Section IV for each Material Evaluation Number.

3.6 Industrial, Radiological Safety, and Training (IRS&T) shall be responsible for the following:

3.6.1 Reviewing data provided by the Material Generator to establish the Health & Safety requirements applicable to the sampling, handling, packaging processing or transportation of material.

3.6.2 Reviewing, after completion of Section I and II of the MEF, the additional information and identifying additional personnel safety requirements.

3.7 Toxic and Solid Waste Programs (TSWP) shall be responsible for the following:

3.7.1 Providing the Department of Transportation (DOT) shipping name.

3.7.2 Providing the DOT hazard class.

3.7.3 Specifying required labels.

3.7.4 Providing DOT identification No.

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3.0 RESPONSIBILITIES (cont.)

3.7.5 Providing EPA waste No.

3.7.6 Providing applicable reactivity group codes.

3.7.7 Filling out Section IV of the MEF.

4.0 DEFINITIONS

4.1 Material Generator - a person at the originating facility who is authorized to prepare raw material, process material, and waste material for transfer.

4.2 Resource Conservation and Recovery Act (RCRA) - The congressional act which established safe and environmentally acceptable management practices for specific wastes. RCRA requires strict "cradle to grave" control and proper management of hazardous waste.

4.3 Hazardous Waste - A discarded material which is listed in the Environmental Protection Agency Hazardous Waste List which exhibits characteristics of ignitability, corrosivity, or reactivity. Both "listed" and "characteristic" wastes are regulated under RCRA.

4.4 Ignitable - Liquid waste with closed-cup flash points < 60°C (140°F), or non-liquid waste capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes.

4.5 Corrosive - Aqueous (water based) wastes with a pH $\leq$ 2 or $\geq$ 12.5.

4.6 Reactive - Waste that exhibits properties such as reacting violently, forming potentially explosive mixtures or generating toxic gases when mixed with water, generating toxic gases (cyanide or sulfied) at pH between 2 and 12.5, or detonating or exploding at standard temperature and pressure or when heated under confinement.

4.7 Authorized Personnel - Personnel who have successfully completed all training requirements to perform work related to this procedure and have been authorized by the Facility Owner to perform the work.

4.8 Controlled Holding Area - The area designated for holding uncharacterized material and staging characterized material (excluding backlog material and material generated from a soil boring activity) for a maximum period of 90 calendar days.

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4.0 DEFINITIONS (cont.)

4.9 Fingerprint Analysis - An analytical process providing a brief description of material parameters as listed in Table 5.

4.10 Raw Material - A non-manufactured substance at the FEMP.

4.11 Process Material - A substance which has gone through a physical state of change.

4.12 Excess Material - A substance which has exceeded its recommended shelf life or intended use.

4.13 Waste Material - A substance which has expended its usefulness, non-recyclable and non-recoverable.

5.0 GENERAL

5.1 General Instructions for Completing the Material Evaluation

5.1.1 Fill in all items of each section. If an item cannot be answered, enter "NOT KNOWN".

5.1.1.1 If an item is not applicable to the material stream being evaluated, indicate as "N/A".

5.1.2 If there is not enough space on the form to record the required data, proceed as follows:

5.1.2.1 Prepare an attachment sheet with the MEF number (and Revision Number, if applicable) and date.

5.1.2.2 Enter the Item Number that corresponds to the Item Number on the MEF.

5.1.2.3 Enter the required data on the attachment sheet.

5.1.2.4 Sign the attachment sheet.

5.1.2.5 In the item block on the MEF, enter "See attachment".

5.1.2.6 Fasten the attachment sheet to the MEF.

5.1.3 Refer questions regarding the form to F&ME.

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6.0 PROCEDURE

6.1 Identification of Material

MATERIAL GENERATOR

6.1.1 If no information is known on the material and the container has no identification, contact F&ME and IRS&T for direction.

6.1.2 Obtain a Material Evaluation Number from F&W.

6.1.3 Record the Material Evaluation Number at the top of each sheet of the Material Evaluation, Form FMPC-OPR-3252 (See Figure 1).

6.1.4 Complete Section I, Items 1 thru 16b, of the Material Evaluation Form per Table 1.

6.1.5 When Section I (Items 1 thru 16b) is completed, forward the form to IRS&T.

NOTE: The material being evaluated shall remain in the generator area until direction is received from F&ME for disposition.

6.2 Establish Safety Requirements

IRS&T

6.2.1 Review the data provided in Section I of the MEF.

6.2.2 Determine potential health or safety concerns that may be encountered while sampling, handling, or processing the material.

6.2.3 In Item 16c specify protective gear that must be used while sampling, handling, or processing material (such as protective clothing, respirator, gloves).

6.2.4 Sign Item 16d and return the MEF to the Material Generator.

6.3 Identification of Material

MATERIAL GENERATOR

6.3.1 Complete Section I of the MEF and forward the form to F&ME.

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6.0 PROCEDURE (cont.)

6.4 Evaluation of Material

F&ME

6.4.1 Ensure an evaluation has not been previously completed for this material type per the source and material type code (Item 1 of Section 1). F&ME may use entire lot codes to designate a waste stream.

6.4.2 Complete Section II of the Material Evaluation form per Table 2.

6.4.3 When Section II is complete, proceed as follows:

6.4.3.1 If the material is classified RCRA or additional information is required for the classification (refer to Item 7 of Section IV), forward the form to Environmental Engineering and Material Generator.

6.4.3.2 If the material is classified as NON-RCRA or exempt (refer to Item 7 of Section II), retain the original form on file and transmit copies to distribution.

NOTE: The Material Generator shall respond by moving the drum to the designated storage area.

6.5 Material Analysis/Disposition Determination

F&ME

6.5.1 Refer to Section II and complete the following applicable substep.

6.5.1.1 If the material had been classified, proceed to Item 6.8.

6.5.1.2 If additional information is required to classify the material, complete items 13 and 14 of Section II.

6.5.1.3 Forward MEF to IRS&T to determine any additional safety requirements.

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6.0 PROCEDURE (cont.)

6.6 Establish Safety Requirements

IRS&T

6.6.1 Review additional information for safety concerns and identify any additional safety requirements.

6.6.2 Sign and forward the MEF to F&ME.

6.7 Additional Requirements

F&ME

6.7.1 Forward a copy of Section II to the Material Generator as authorization to prepare uncharacterized material for transfer to the Controlled Holding Area and a copy to Environmental Monitoring to identify and authorize sampling requirements.

NOTE: The original form shall be retained until the required information is received.

6.7.2 When additional information is received, proceed as follows:

6.7.2.1 Fill in the completion date (Item 15 of Section II).

6.7.2.2 Ensure that Section II is complete.

6.7.2.3 Initial and date each revision of Section II.

6.7.2.4 Briefly explain any corrections made (Item 2 of Section II) to the information contained in Section II.

6.7.2.5 Forward the Material Evaluation and analysis results to Environmental Engineering.

6.8 Classified Material

ENVIRONMENTAL ENGINEERING

NOTE: Refer to Item 7 of Section II for material classification.

6.8.1 If the material is classified as NON-RCRA, proceed as follows:

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6.0 PROCEDURE (cont.)

6.8.1.1 For material in storage, transmit the original Material Evaluation form to F&ME, a copy to the Facility Owner of the Controlled Holding Area, and a copy to the material generator.

6.8.1.2 For material being held at the generator area, forward the original Material Evaluation form to F&ME and a copy to the material generator.

6.8.2 If the material is classified as RCRA, proceed as follows:

6.8.2.1 Complete Section III per Table 3.

6.8.2.2 Forward the Material Evaluation Form to Toxic & Solid Waste Programs.

6.9 Material Identification

TSWP

NOTE: DELETED

6.9.1 Complete Section IV per Table 4.

6.9.2 Review section IV and confirm container information is correct.

6.9.3 Forward the MEF to FM&E.

6.10 Revising the Material Evaluation

MATERIAL GENERATOR, F&ME, OR ENVIRONMENTAL ENGINEERING

6.10.1 Determine a revision to the MEF is required.

6.10.2 Notify the appropriate departments of the numbered MEF requiring change and the revision required.

MATERIAL GENERATOR

6.10.3 Obtain file copy of the specified MEF and a new MEF.

6.10.4 Obtain a revision number from Waste Management.

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6.0 PROCEDURE (cont.)

6.10.5 Record the original MEF number and the revision number on the new MEF.

6.10.6 Complete Section I of the new MEF incorporating the necessary revisions and submit to F&ME.

6.10.6.1 If the revision requested is not applicable to Section I, complete Section I per the original MEF and forward to F&ME.

F&ME/ENV. ENG./TSWP/IRS&T

6.10.7 If the revision is applicable to Section II, III, or IV, complete the new MEF incorporating the revision.

7.0 APPLICABLE DOCUMENTS

7.1 Drivers

None

7.2 Reference Documents

None

8.0 APPLICABLE FORMS

8.1 FS-F-3252, "Material Evaluation Form"

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Authorization: W. H. Britton, President	Supersedes: None	Issue Date: 10-22-91

TABLE 1
INSTRUCTIONS FOR COMPLETING MATERIAL EVALUATION FORM - (SECTION I)

ITEM NO	DESCRIPTION
1	Record the FEMP Source Code (SRC), Material Type Code (MTC), and the 15 digit Lot Code.
2	Designate the Plant/Building/Site location where material was generated.
3	Specify the process/building area which generates the material.
4	Provide the name of equipment generating the material.
5	Record the approximate date of generation (year, month, day) as specifically as possible.
6	Indicate the physical state of the material.
7	Estimate net weight of the material.
8	Indicate whether the material contains more than one substance (such as contaminated gloves, coveralls, booties, or other contaminated items).
9	Indicate whether the material is a waste.
10	Provide common names of the material.
11	Provide chemical names associated with the material.
12	Indicate sources of the common and chemical names.
13	Specify alternate material name (For example, identical material generated by different equipment).
14	Record alternate codes (source or material codes) used for material which is chemically identical to this material.
15	Indicate any substance, such as pesticides, solvents, or heavy metals, which is contained or suspected to be contained in the material.
16	a) Specify the reason for suspecting the substance indicated and quantity of suspect material[1].
	b) List sources of information utilized for identifying the suspect substances indicated.

[1] Attach a copy of the MSDS as applicable.

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TABLE 1 (cont.)
INSTRUCTIONS FOR COMPLETING MATERIAL EVALUATION FORM - (SECTION I)

ITEM NO	DESCRIPTION
16 (cont.)	c) Identify safety concerns & special safety requirements. d) Sign and date the form
17	If a fingerprint visual inspection (Table 5) of the material was completed, attach to the Material Evaluation Form.
18	Record and describe the number of solid/liquid/gas layers within the material.
19	Record the pH of liquid material or liquid phase of material[2].
20	Record the flashpoint of liquid material or liquid phase[2].
21	If the material is a wet solid (sludge) and a paint filter test has been completed, specify test results (solid or liquid)[2].
22	Indicate if material is considered reactive. Include an explanation.
23	If the material is not a liquid, indicate if material is ignitable. Include an explanation.[2]
	DELETED
24	Provide additional information that may be used to evaluate the material.
25	List additional sources (such as phone call, specification, procedures, or other input) of information used to complete this form.
26	a) Provide the name and extension number of the individual responsible for responding to questions regarding Section I. b) Record the date Section I is completed.

[2] Attach results if available. Identify source, such as a sample plan.

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TABLE 2
INSTRUCTIONS FOR COMPLETING MATERIAL EVALUATION FORM - (SECTION II)

ITEM NO	DESCRIPTION
1	Indicate if material is waste (discarded, used, by- product).
2	Indicate if waste is excluded under 261.4(a) (CWA pointsource discharge, irrigation return flow, AEC source, special nuclear or by-product material, insitu mining waste).
3	Indicate if waste excluded from regulation under 264.1(b).
4	If the waste is listed in 261 Subpart D, or material contains a waste listed in subpart D, indicate the list and the waste number.
5	Indicate if waste exhibits characteristics specified in 261 Subpart C. List the characteristic exhibited.
6	Indicate if the material is a possible RQ hazardous substance. If yes, list the RQ amount in Lbs.
7	Indicate material classification. If material can not be classified indicate that the material needs further action and provide recommendations regarding information required.
8	Indicate if classification was based on data from Section I or an evaluation of an identical waste stream. If based on previous evaluation, list the Material Evaluation # and lot code of stream.
9	Indicate whether or not the material is subject to land ban restrictions and the effective date if applicable.
10	Distribute to the Departments listed in Section IV (Item 9).
11	List additional sources of information (phone calls, manufacturing specification, reference) used in this evaluation.
12	Provide the name and phone extension of the individual responsible for responding to questions regarding Section II and the date that Section II was completed.books).
13	Indicate if sampling is required (Refer to Section II Item 7).
14	Indicate if amount of time necessary for sampling and analysis require transfer of material to a controlled holding area. If yes, record date that the material was authorized for transfer.
15	Indicate date that additional information was included.
16.a	Identify any additional safety concerns and requirements.
16.b	Sign and date the form.

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TABLE 3
INSTRUCTIONS FOR COMPLETING MATERIAL EVALUATION FORM - (SECTION III)

ITEM NO	DESCRIPTION
	DELETED
	DELETED
	DELETED
1	Based on Section I and II (or recent information) indicate container recommended (such as carbon steel, stainless steel, polyethylene).
2	Based on Section I and II (or recent information) indicate the reactivity group codes associated with the material.
3	List additional sources of information used to complete the form (phone calls, material specifications, reference material).
4	Provide the name and extension of the individual responsible for responding to questions regarding Section III and the date that Section III was completed.

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TABLE 4
INSTRUCTIONS FOR COMPLETING MATERIAL EVALUATION FORM - (SECTION IV)

ITEM NO	DESCRIPTION
1	Provide the D.O.T. Shipping Name for material.
2	Provide the D.O.T. Hazard Class for material.
3	List required D.O.T. drum labels.
4	Provide the D.O.T. Identification No. (UN or NA) and prefix.
5	Provide the EPA Waste No. noted for material.
6	List applicable reactivity group codes (Refer to Section III, Item 2).
7	Record the FEMP lot code (Refer to Section I, Item 1).
8	Indicate whether a revision is required to the MEF.
9	Distribution.
10	Provide the name and extension of the individual responsible for responding to questions regarding Section IV and the date that Section IV was completed.

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TABLE 5
FINGERPRINT ANALYSIS PARAMETERS

PARAMETER	APPLICABILITY	TEST METHOD/REQUIREMENTS
Visual inspection	Required for all waste streams	To include, at a minimum, a discussion of the following: general description material color(s) particle size apparent stains multiple phases probe drum with pipe to ensure consistency
Liquid content	Required for waste suspected of containing free liquids	SW-846-9095: Paint Filter Liquids Test (PFLT)
pH	Required for waste streams with a free liquid phase (as determined by the PFLT)	SW-846-9040: pH Electrometric Method FMPC Method No. 3033[1]
Flash point	Required for waste with a free liquid phase (as determined by the PFLT)	Flash point meter
Density/specific gravity	Required for homogeneous wastes only; density for solid wastes, specific gravity for liquid wastes	Gravimetric for Density/ASTM D 1217 for Specific Gravity FMPC Method Nos. 1004 and 1005[1]

[1] These references are included for information, not for operational use.

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Fernald Site
MATERIAL EVALUATION FORM

MEF NO.: _____

MEF REV. NO.: _____

SECTION I - MATERIAL GENERATOR

1. FEMP SRC. | MTC. | 2. PLANT AND/OR BUILDING NO. | 3. PROCESS AREA.

4. EQUIPMENT NAME(S). | 5. MEF NO DATE | MEF REV DATE | 6. MATERIAL PHYSICAL STATE ☐ Liquid ☐ Gas ☐ Wet Solid (Sludge) ☐ Dry Solid

7. APPROXIMATE NET WEIGHT OF FULL CONTAINER? ☐ <100 lbs. ☐ 100 to 1000 lbs ☐ >1000 lbs. | 8. DOES MATERIAL CONSIST OF MORE THAN ONE SUBSTANCE? ☐ YES ☐ NO

9. IS MATERIAL A WASTE? ☐ YES ☐ NO | 10. COMMON NAMES. | 11. CHEMICAL NAMES.

12. COMMON/CHEMICAL NAME SOURCE ☐ Process Information ☐ MSDS ☐ Container Label ☐ FEMP Lot Code | OTHER | 13. SIMILAR MATERIAL NAME | 14. SIMILAR MATERIAL LOT CODE(S)

15. SUBSTANCES SUSPECTED

☐ Aerosols	☐ Cresol	☐ Endrine	☐ Methylene Chloride	☐ TBP/Kerosene
☐ Arsenic	☐ m-Cresol	☐ Heptachlor	☐ Motor/Engine Oil	☐ Tetrachloroethylene
☐ Barium	☐ o-Cresol	☐ Hexachlorobenzene	☐ Nitrobenzene	☐ 1,1,1-Trichloroethane
☐ Benzene	☐ p-Cresol	☐ Hexachloroethane	☐ Other Organics	☐ 2,4,5-TP (Silvex)
☐ Cadmium	☐ 2,4-D	☐ Hexachloro-1,3-butadiene	☐ Paint Stripper	☐ 2,4,5-Trichlorophenol
☐ Carbon Tetrachloride	☐ Degreaser	☐ Hydraulic Oil	☐ Paint Thinner/Mineral Spirits	☐ 2,4,6-Trichlorophenol
☐ Chlordane	☐ 1,4-Dichlorobenzene	☐ Iron	☐ Pentachlorophenol	☐ Toxaphene
☐ Chlorobenzene	☐ 1,2-Dichloroethane	☐ Lead	☐ Perchloroethylene	☐ Trichloroethylene
☐ Chloroform	☐ 1,1-Dichloroethylene	☐ Lindane	☐ Pyridine	☐ Unknown
☐ Chromium	☐ 2,4-Dinitrotoluene	☐ Mercury	☐ Selenium	☐ Vinyl Chloride
☐ Coolants	☐ Enamel	☐ Methoxychlor	☐ Silver	☐ Xylene
		☐ Methyl ethyl ketone	☐ Synthetic oil	☐ Oil

16. a. REASON FOR SUSPECTING ALL SUBSTANCES AND QUANTITY

16. b. SOURCE FOR REASON AND QUANTITY (Attach MSDS if Available)

☐ Personnel Interviews	☐ AEDO Log	☐ MSDS	☐ Prior Evaluation of Similar Material
☐ Historical Records	☐ Physical Evidence	☐ Container Label	What Material: _____
☐ FEMP Lot Code	☐ Process Information	☐ Sump Report	SRC: _____ MTC _____
		☐ Soil Database	

16. c. HEALTH AND SAFETY CONCERNS/REQUIREMENTS | 16. d. SIGNATURE AND DATE

17. HAS THE "FINGERPRINT" VISUAL INSPECTION BEEN COMPLETED? ☐ YES ☐ NO | 18. NUMBER OF PHASES | 19. pH (IF KNOWN) (Attach Lab Results) | 20. FLASH POINT (IF KNOWN) (Attach Lab Results)

21. HAS A PAINT FILTER TEST BEEN COMPLETED? ☐ YES ☐ NO

22. IS IT REACTIVE? ☐ YES ☐ NO | EXPLAIN

23. IS IT IGNITABLE? ☐ YES ☐ NO | EXPLAIN

24. OTHER INFORMATION (Example: Is the Material a Product or Waste?)

25. ADDITIONAL SOURCES OF INFORMATION

26. PRIMARY CONTACT INDIVIDUAL | EXTENSION | DATE COMPLETED

NOTE: Form shall be completed using one or a typewriter
NOTE: Only WEMCO employees shall sign this form

FS-F-3252 (REV 10/10/91) Sheet 1

MATERIAL EVALUATION FORM
FORM NO. FS-F-3252
Figure 1 (Sheet 1 of 2)

R - MATERIAL REVISED, ADDED, OR DELETED.

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT COMPANY OF OHIO SITE DOCUMENT PROGRAM		SITE STANDARD OPERATING PROCEDURE Page 17 of 18
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Authorization: W. H. Britton, President	Supersedes: None	Issue Date: 10-22-91

Fernald Site
MATERIAL EVALUATION FORM
(Continued)

MEF NO _____
MEF REV NO _____

SECTION II - FACILITY AND MATERIALS EVALUATION

1. IS MATERIAL A WASTE? ☐ YES ☐ NO
2. IS IT EXCLUDED UNDER 261 (10)? ☐ YES ☐ NO
3. IS IT EXCLUDED UNDER 261 (10)? ☐ YES ☐ NO
4. DOES IT CONTAIN A LISTED WASTE AS PER 261 SUBPART D? ☐ F ___ ☐ K ___ ☐ P ___ ☐ U ___ ☐ NOT LISTED
5. DOES IT EXHIBIT ANY CHARACTERISTICS AS PER 261 SUBPART C? ☐ YES ☐ NO EXPLAIN
6. IS IT A RQ HAZARDOUS SUBSTANCE? ☐ YES ☐ NO POUNDS
7. CLASSIFICATION AS A WASTE
   ☐ RCRA Hazardous Waste
   ☐ Source Exempt
   ☐ Non-RCRA Waste
   ☐ Radioactive
   ☐ Needs Further Action (no sampling)
   EXPLAIN: _____
8. PRIMARY BASIS FOR CLASSIFICATION
   ☐ Generator information
   ☐ Prior material evaluation
   WHAT MATERIAL? _____
   LOT NUMBER _____
9. IS IT SUBJECT TO LDR BAN RESTRICTIONS? ☐ NO ☐ YES Effective Date _____
10. DISTRIBUTE PER SECTION IV ITEM 9
11. OTHER INFORMATION SOURCES USED
12. PRIMARY CONTACT INDIVIDUAL — EXTENSION — DATE COMPLETED
13. IS SAMPLING REQUIRED? ☐ YES ☐ NO
14. IS TRANSFER TO CONTROLLED HOLDING AREA REQUIRED? ☐ YES ☐ NO — DATE
15. INFORMATION ACTION COMPLETION DATE
16. HEALTH AND SAFETY CONCERNS REQUIREMENTS
17. SIGNATURE AND DATE

SECTION III - ENVIRONMENTAL ENGINEERING

1. RECOMMENDED STORAGE CONTAINER MATERIAL ☐ Carbon Steel ☐ Stainless Steel ☐ Polyethylene ☐ Other _____
2. APPLICABLE REACTIVITY GROUP CODES ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐ -
3. OTHER INFORMATION SOURCES USED
4. PRIMARY CONTACT INDIVIDUAL — EXTENSION — DATE COMPLETED

SECTION IV - TOXIC AND SOLID WASTE PROGRAMS

1. PROPER D.O.T. SHIPPING NAME
2. D.O.T. HAZARD CLASS
3. REQUIRED LABELS
4. D.O.T. IDENTIFICATION NO — SUFFIX ☐ UN ☐ NA
5. EPA WASTE NO
6. APPLICABLE REACTIVITY GROUP CODES (COPY FROM SECTION III ITEM 2)
7. TEMP SRC AND MTC (COPY FROM SECTION I ITEM 1) — SRC — MTC
8. IS A REVISION TO MEF REQUIRED? ☐ YES ☐ NO
9. DISTRIBUTION
   - MATERIAL GENERATOR — DATE
   - ENVIRONMENTAL ENGINEERING — DATE
   - ENVIRONMENTAL MONITORING — DATE
   - MC&A — DATE
   - RSET — DATE
   - FACILITIES AND WAREHOUSING — DATE
   - FEME — DATE
   - CONTROLLED HOLDING AREA — DATE
10. PRIMARY CONTACT INDIVIDUAL — EXTENSION — DATE COMPLETED

FS-F-3252 (REV 10/10/91) Sheet 2

MATERIAL EVALUATION FORM
FORM NO. FS-F-3252
Figure 1 (Sheet 2 of 2)

R - MATERIAL REVISED, ADDED, OR DELETED.

RECORD OF ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORITY
01-11-91	0	Instructions for completing the Material Evaluation form required per Request No. P90-292, initiated by K. Nuhfer.
04-16-91	1	Revised to update form and include steps to allow for an MEF revision per Request No. P91-093, initiated by J. Ogg.
06-20-91	2	Revised to update technical content and form per Request No. P91-235, initiated by R. Henderson.
10-22-91	3	Revised to insert correct form per Request P91-390, initiated by L. Hamblin.

R - MATERIAL REVISED, ADDED, OR DELETED.