WASTE PIT AREA CONTAINMENT IMPROVEMENT REMOVAL ACTION 22 WORK PLAN AUGUST 1992

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Waste Pit Area Containment Improvement Removal Action 22 Work Plan

Environmental Remedial Action Project
Fernald Environmental Management Project
Fernald, Ohio

August 1992
Revision No. 0

United States Department of Energy

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Waste Pit Area
Containment Improvement
Removal Action 22
Work Plan

CONTENTS

SECTION

CONTENTS (Continued)

APPENDICES

LIST OF ILLUSTRATIONS

FIGURES

TABLES

LIST OF ACRONYMS

AMS	Air Monitoring Stations
ANSI	American National Standards Institutes
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ARAR	Applicable or Relevant and Appropriate Requirements
BDN-ETS	Biodenitrification-Effluent Treatment System
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DOE	United States Department of Energy
EE/CA	Engineering Evaluation/Cost Analysis
FEMP	Fernald Environmental Management Project (formerly Feed Materials Production Center (FMPC))
HDPE	High Density Polyethylene
IAWWT	Interim Advanced Waste Water Treatment
MEF	Material Evaluation Form
OAC	Ohio Administrative Code
ODOT	Ohio Department of Transportation
Ohio EPA	Ohio Environmental Protection Agency
PCB	Polychlorinated Biphenyl
QAPD	Quality Assurance Program Description
QAPjP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RAWP	Removal Action Work Plan
RCRA	Resource Conservation and Recovery Act
REMP	Radiological Environmental Monitoring Program
RSE	Removal Site Evaluation
SCQ	Sitewide CERCLA Quality Assurance Project Plan
TBC	To-Be-Considered
TCLP	Toxicity Characteristic Leaching Procedure
US EPA	United States Environmental Protection Agency
WEMCO	Westinghouse Environmental Management Company of Ohio (formerly Westinghouse Materials Company of Ohio (WMCO))
WPA	Waste Pit Area

SECTION 1

INTRODUCTION

This work plan describes a removal action for the Waste Pit Area Containment Improvements at the Fernald Environmental Management Project (FEMP). The removal action will improve the containment of specified contaminated soil areas, correct the Waste Pit 4 south berm, protect the Burn Pit from wind erosion, and improve the vegetation cover on the waste pits. These improvements will be maintained until the final remediation of the Waste Pit Area (WPA) under Operable Unit 1 is conducted. The Waste Pit Area Containment Improvement was identified as a removal action in a letter entitled "Proposed Phase III Removal Actions" (DOE 1992a) which was submitted to the United States Environmental Agency (US EPA) by the United States Department of Energy (DOE) in accordance with Section IX.F.2 of the 1991 Amended Consent Agreement (US EPA 1991). This Removal Action Work Plan (RAWP) will be submitted to the US EPA for approval in accordance with the requirements of the Amended Consent Agreement (US EPA 1991). This RAWP will also be submitted to the Ohio Environmental Protection Agency (Ohio EPA).

1.1 Historical Background

The WPA covers approximately 23 acres of the FEMP site and consists of Waste Pits 1 through 6, the Clearwell, and the Burn Pit. While the FEMP was in operation, low-level radioactive waste generated by the various chemical and metallurgical processes were deposited in one of the six waste pits or burned in the Burn Pit. Waste Pit 1 was backfilled and covered with clean soil in 1959. In 1964, Waste Pit 2 was backfilled and covered with clean soil. Waste Pit 3 was taken out of service, backfilled, and covered with clean soil in 1977. Waste Pit 4 was covered with clean soil in 1986. A Resource Conservation and Recovery Act (RCRA) approved bentonite cap was placed over Waste Pit 4 in 1988, and the pit was closed under an "interim" closure plan. Waste Pit 5 was taken out of service in 1987 and then covered with water. Waste Pit 6 was taken out of service in 1985 and then covered with water. The Burn Pit is currently overgrown with grass, and part of it is overlain by the Waste Pit 4 berm and liner. There is a dirt access road on the Burn Pit which is currently used only to access the monitoring wells in the area. From 1952 until 1987, the Clearwell was used as a final settling basin for process water that passed through Waste Pits 3 and 5 prior to being discharged to the Great Miami River. The Clearwell currently receives surface water runoff from Waste Pits 1, 2, and 3 and excess storm water from Waste Pit 5 (DOE 1991b).

1.2 Current Situation

A Removal Site Evaluation (RSE) addressing the surface contamination in the WPA was prepared in May 1991 (DOE 1991c). The RSE considered inhalation exposure from suspended airborne contaminants and

direct radiation exposure from surface contamination. From site inspections and aerial photographs, exposed soil surfaces were found on the roads and shoulders, graded areas, water drainage paths, and on the waste pits. The RSE evaluated the following four areas of concern:

1) Immediate area between Waste Pits 4 and 6
2) Area south and east of Waste Pit 2
3) Area east of the WPA
4) Cover on Waste Pit 3.

In June of 1992, an addendum to the RSE was issued (DOE 1992c). The addendum to the RSE, which has been included as Appendix A, evaluated the following four newly identified areas of concern within the WPA:

1) Waste Pit 4 South Berm Erosion
2) Burn Pit Wind Erosion
3) Vegetation Cover on the Waste Pits
4) Weston Road Area.

This removal action addresses the following four areas of concern (DOE 1992a):

1) Containment of Specified Contaminated Soil Areas
2) Correction of Waste Pit 4 South Berm Erosion
3) Protection from Burn Pit Wind Erosion
4) Improvements to Vegetation Cover on the Waste Pits.

The area between Waste Pits 4 and 6, as identified in the original RSE, will be addressed by this RAWP under the containment of specified soil areas. The improvements to the vegetation cover on the waste pits will address the cover on Waste Pit 3, as identified in the original RSE, along with the cover of Waste Pits 1 and 2 as identified by the addendum to the RSE. The area south and east of Waste Pit 2 and the area east of the WPA, which were identified in the original RSE, have been reevaluated and have been found to have healthy vegetation with a minimal threat of release. Therefore, these areas are not areas of concern for this removal action. The Weston Road Area is not addressed by this removal action, but additional sampling and analysis are to be performed in this area.

Each of the four areas of concern addressed by this RAWP shall reduce the spread of contamination by windborne and waterborne transport. This effort will reduce or eliminate the exposure to individuals working in the immediate vicinity of the WPA and will reduce or eliminate the level of effort required for decontamination of equipment entering and leaving the WPA.

Removal Action 22, WPA Containment Improvement, is being conducted as a time-critical removal action. An Engineering Evaluation/Cost Analyses (EE/CA) will not be required for this removal action. An alternative evaluation was prepared to study possible solutions for each of the four areas of concern which are addressed by this RAWP, and a summary of this evaluation has been included as Appendix B.

Removal Action 2, Waste Pit Area Runoff Control, is currently addressing the waste pit area stormwater runoff control. The water from the waste pit area will be collected in a stormwater collection sump located south of the Clearwell. The water will then be pumped to the Biodenitrification-Effluent Treatment System (BDN-ETS) Interim Advanced Waste Waster Treatment (IAWWT) System where it will be treated. The treated water will be sampled prior to discharge to the Great Miami River through Manhole 175. As part of Removal Action 22, Waste Pit Area Containment Improvement, specific drainage ditches in the WPA will be regraded. This effort will help Removal Action 2 control the stormwater runoff by directing the flow of water in the drainage ditches to the stormwater collection sump.

SECTION 2

AREAS OF CONCERN

The following subsections provide a description of the four areas of concern which will be addressed by this RAWP, and which were identified by the RSE and the addendum to the RSE. The areas of concern have been identified on Figure 2-1.

2.1 Containment of Specified Contaminated Soil Areas

Surface contamination involving radionuclides has been detected along the roads in the drainage ditches within the WPA. Elevated radioactive contamination levels were detected along the road in the drainage ditches between Waste Pits 3 and 5, between Waste Pits 4 and 6, and south of Waste Pits 4 and 6. Elevated radioactive contamination levels were also detected on the road between Waste Pit 4 and 6. This road was covered with one ply of Uni-mats® to allow access to Waste Pit 5. In order to mitigate the potential for a release of contamination, these drainage ditches will have to be upgraded. Also, the road between Waste Pits 4 and 6 will have to be improved.

2.2 Correction of Waste Pit 4 South Berm Erosion

The toe of the slope of the Waste Pit 4 south berm area has eroded. The primary cause of the erosion is a drainage ditch located at the toe. Some moderate erosion gullies and rills are evident on the berm slope. The berm, at present, displays no visible signs of sliding or rotational instabilities. A portion of the south berm has erosion protection in the ditch at the toe of the slope. This portion is in a stable condition. The main focus of the repairs to the berm will concentrate on erosion controls of the ditch at the dike's toe.

2.3 Protection From Burn Pit Wind Erosion

Excessive traffic and wind erosion have caused areas of the Burn Pit to become exposed. Vehicle traffic on the Burn Pit is currently being controlled by administrative access points. The only traffic currently allowed on the Burn Pit is to provide access to the monitoring wells in the area. The exposed material could potentially migrate through fugitive dust emissions or surface water runoff. The cover on the Burn Pit needs to be improved to provide a means to protect the Burn Pit from further erosion.

FEMP NORTH

STATE OF OHIO NORTH (NAD 27)

1.5678°

OU1 BOUNDARY

MAIN LINE SPUR

EXISTING SITE TRAILERS

WASTE PIT #5

FOR ROADWAY AND DITCHES SEE GRADING PLAN DWG SK-G-00793 (FIGURE 3-1)

UNI-MAT SEE DETAIL 1 ON DWG SK-G-00704 (FIGURE 3-3)

WASTE PIT #6

WASTE PIT #3

BURN PIT

WASTE PIT #4

FOR DITCHES SEE GRADING PLAN DWG SK-G-00793 (FIGURE 3-1)

AREA OF STRESSED VEGETATION

WASTE PIT #2

WASTE PIT 4 SOUTH BERM MODIFACTION SEE GRADING PLAN DWG SK-G-00793 (FIGURE 3-1)

WASTE PIT #1

CLEARWELL

STORMWATER COLLECTION SUMP

BDN SURGE LAGOON

HIGH NITRATE STORAGE RESERVOIR

SILO 4

2-2

NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW.

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   WESTON TOPOGRAPHY, 1986
   WESTON TOPOGRAPHY, 1988
   FEMP CADD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS

2. THESE ARE THE AREAS OF CONCERN THAT NEED CONTAINMENT IMPROVEMENTS.

LEGEND

EXISTING		PROPOSED
	MAIN LINE SPUR	
	FENCE	
	TREE LINE	
	CONTOURS	
	ROADWAY AND DITCHS (SEE NOTE 2)	
	STRESSED VEGETATION (SEE NOTE 2)	
	UNI-MAT WOOD MATS (SEE NOTE 2)	
	WASTE PIT 4 SOUTH BERM (SEE NOTE 2)	
	MONITORING WELL	
	OU1 BOUNDARY	

REFER DWG NO.	REFERENCE DWG TITLE
SK-G-00793	GRADING PLAN (FIGURE 3-1)
SK-G-00704	DETAILS (FIGURE 3-3)

PRELIMINARY
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REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	APP'D	ORIGINATOR DETAILS AND DATE	CODE
0	WORK PLAN			

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

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

PROJECT NAME
WASTE PIT AREA CONTAINMENT IMPROVEMENTS
OU1/PO54

DRAWING TITLE
CIVIL
SITE PLAN
AREAS OF CONCERN (FIGURE 2-1)

DRAWN BY	DATE	DESIGNED, CHECKED BY	DATE	CHECKED BY	DATE
L.J.GEORGE	06/26/92			T.PICKERING	07/07/92
PLOT/MISC NO.		PLOT#		SCALE	CLASS
				1"=60'-0"	

SUBMITTED FOR APPROVAL | APPROVAL RECOMMENDED | ORIGINAL APPROVED

DOE PROJECT NO. | CHECK CONTROL PROJECT NO. | ORIGINAL NO. | SHEET NO. | REV. NO.
VBS 1.1.1.1.2.2 | 00-90701 | SK-G-00718 | G0001 | 0

2.4 Improvements to Vegetation Cover on the Waste Pits

There are several areas of stressed vegetation on the surface of Waste Pits 1, 2, and 3. It is estimated that the exposed area is less than ten percent of the total surface area of Waste Pits 1, 2, and 3. These areas of stressed vegetation are exposing potentially contaminated soil which could potentially become airborne or migrate through surface water runoff. The vegetative cover needs to be improved in various areas of Waste Pits 1, 2, and 3.

SECTION 3

PROPOSED WPA CONTAINMENT IMPROVEMENT REMOVAL ACTION

In order to implement this removal action, each of the four areas of concern need to be addressed. To improve the containment of specified contaminated soil areas, selected drainage ditches will be improved and a layer of Uni-mats® will be placed over the road between Waste Pits 4 and 6. The Waste Pit 4 south berm erosion will be corrected by utilizing riprap. A soil and vegetative cover is to be placed over the Burn Pit and Waste Pits 1, 2, and 3 to protect the Burn Pit from wind erosion and to improve the vegetation cover on the Waste Pits. The removal action activities for these two areas of concern are discussed together in Subsection 4.4, entitled Protection of Areas of Stressed Vegetation.

3.1 Containment of Specified Contaminated Soil Areas

3.1.1 Description

Specific ditches in the WPA have very little to no drainage pitch. To contain and to minimize the spread of contamination in these ditches, the drainage pitch needs to be established and a durable channel provided to maintain this pitch. The areas of concern have been divided into the following three construction zones and are shown in Figure 2-1:

1) Ditches along the road between Waste Pit 5 and Waste Pit 3
2) Ditches along the road between Waste Pit 4 and Waste Pit 6
3) Ditches south of Waste Pit 4 and Waste Pit 6.

Work will begin on the ditch along the south side of the road running between Waste Pits 5 and 3 progressing from the west end to the east end establishing the required drainage pitch. Once the south ditch is established, the culvert across the road will be installed. Then the ditch drainage along the north side of the road between Waste Pits 5 and 3 will be established. The ditches along the road between Waste Pits 4 and 6 will be regraded next, and finally the ditches south of Waste Pits 4 and 6 will be regraded. Pooling in completed sections of the drainage ditches will be prevented by beginning the work from the lowest drainage point. Once all of the drainage ditches have been improved, the road between Waste Pits 5 and 3 and the road between Waste Pits 4 and 6 will be improved.

3.1.2 Implementation

In the course of implementing this removal action, soil and debris may be generated as a result of improving specific drainage ditches in the area. The soil and debris will be handled according with the Removal Action 17 Work Plan for the Improved Storage of Soil and Debris (DOE 1992b). The

implementation activities to upgrade the ditches have been divided into three construction zones. Soil and debris will need to be moved within the ditches to establish a sufficient drainage pitch. Material may be moved in the construction zone it was generated from, but material may not be moved from one construction zone to another. Any material that is removed from a construction zone that is not used as fill material in the same construction zone will be considered as excess material. Excess material will be containerized and handled according to the Removal Action 17 Work Plan (DOE 1992b).

The ditches adjacent to the Waste Pit 5 south berm road basically drain slowly to a low spot, forming a stagnant pool at this location. The ditch on the north side of the road is the toe of the Waste Pit 5 berm. Excavation into this ditch will need to be limited to prevent any stability problems. The ditch on the south side will be established outside of the existing Waste Pit 3 cap. The drainage plan, presented in Figures 3-1 through 3-3, proposes a ditch located on the south side of the road that drains east to west. The construction of the ditch and drainage of this area will proceed as follows:

1) A culvert will be installed at the far west end of the south side of the Waste Pit 5 road. The outfall for this culvert will drain onto the Waste Pit 3 west slope.

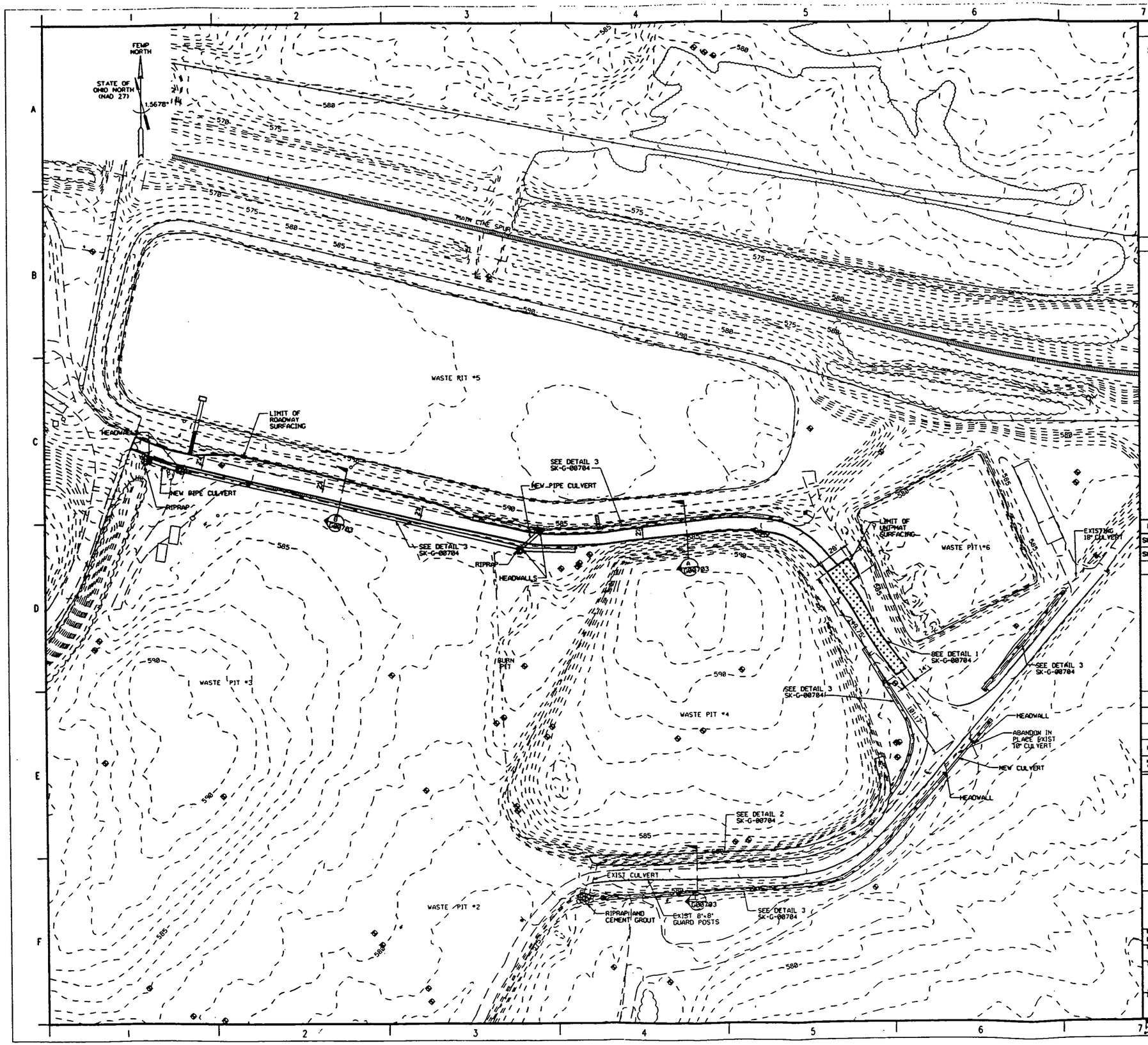
2) Ditch excavation will proceed from this culvert and continue east along the south edge of the Waste Pit 5 road. The materials excavated to establish the ditch flow to the culvert will be placed into the ditch on the north side of the road.

3) This excavation will continue to the low point (where water presently drains into a standing pool).

4) A culvert, that drains the ditch from the north side of the road to the south ditch, is then installed.

5) Ditch excavation will continue on the north side of the road to establish a proper drainage pitch.

The culverts will be constructed of corrugated metal pipe, concrete pipe, or High Density Polyethylene (HDPE) pipe. The culvert sizes will be determined by a hydrology study of the immediate area during the design phase prior to field activities. Headwalls, or other suitable structures, will be constructed at the inlet and outfall of the culverts. Riprap protection will be provided at the ends of the culvert, to protect against scour erosion. All ditches and roads will be shaped to a smooth hydraulic profile. Typical ditch sections, shown in Figure 3-3, Details 2 and 3, will include a geotextile fabric, overlain by a crushed stone aggregate with a coarse rock (one-inch to four-inch size) for a wearing surface. At locations of high water velocities (i.e. at culvert ends and ditch confluences) the rock protection will be slushed with cement grout.



NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW.

EXISTING SITE DATA SOURCE (IN PLANT FILES)
WESTON TOPOGRAPHY, 1986
WESTON TOPOGRAPHY, 1988
FEMP CADD GRID/UTILITY DRAWINGS
FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS

LEGEND

EXISTING		PROPOSED
	MAIN LINE SPUR	
	FENCE	
	TREE LINE	
	CONTOURS	
	DITCH & FLOW DIRECTION	
	UNI-MAT WOOD MATS	
	MONITORING WELL	
	POWER POLE	

REFER DWG NO.	REFERENCE DWG TITLE
SK-G-00783	CROSS SECTION (FIGURE 3-2)
SK-G-00784	DETAILS (FIGURE 3-3)

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REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A/E	SPONSOR	DOE
				DETAILS AND DATE
0	WORK PLAN			

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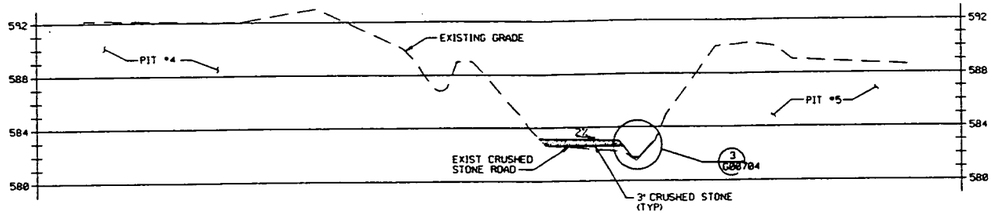
PROJECT NAME
WASTE PIT AREA CONTAINMENT IMPROVEMENTS
OU1/PO34

DRAWING TITLE
CIVIL
GRADING PLAN
(FIGURE 3-1)

DRAWN BY	DATE	DESIGNED, CHECKED BY	DATE	CHECKED BY	DATE
L.J.GEORGE	05/29/92			T. PICKERING	07/07/92
PLANT/MISC. NO.	FUSION			SCALE 1"=40'	CLASS
SUBMITTED FOR APPROVAL		APPROVAL RECOMMENDED		DOE/EMC APPROVED	
A/E DATE		OPERATING CONTRACTOR DATE		DOE DATE	
DOE PROJECT NO.	CHECK CHECK, PROJ. NO.	DRAWING NO.		SHEET NO.	REV. NO.
	WBS 1.1.1.1.2.2 00-90701	SK-G-00793		G0002	0



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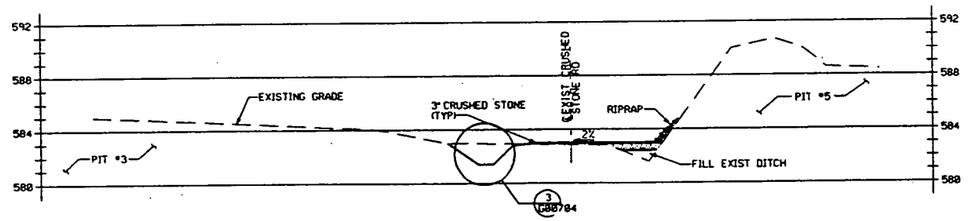
VERTICAL SCALE : 1"=4'



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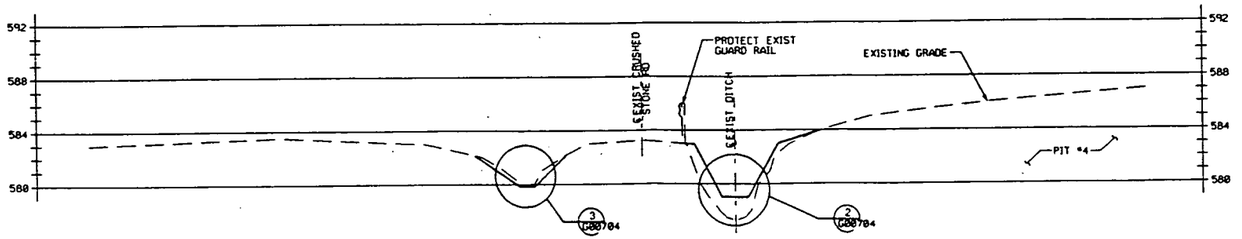

SECTION (C) REF G00703 G00793
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VERTICAL SCALE : 1"=4'

NOTES

3688

REFER DWG NO.	REFERENCE DWG TITLE
SK-G-00793	GRADING PLAN (FIGURE 3-1)
SK-G-00704	DETAILS (FIGURE 3-3)

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0	WORK PLAN			
REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	APP'D	ORIGINATOR DETAILS AND DATE	DATE

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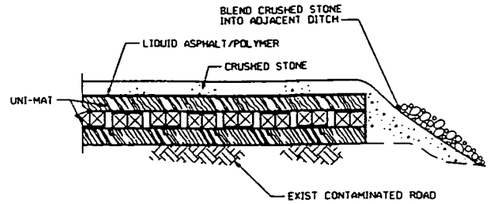
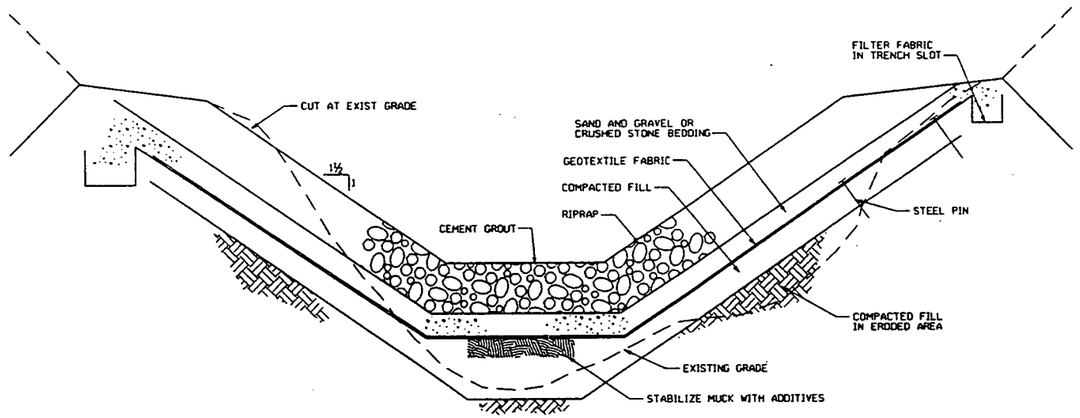
PROJECT NAME
WASTE PIT AREA CONTAINMENT IMPROVEMENTS
OU1/PO54

DRAWING TITLE
CIVIL
CROSS SECTION
(FIGURE 3-2)

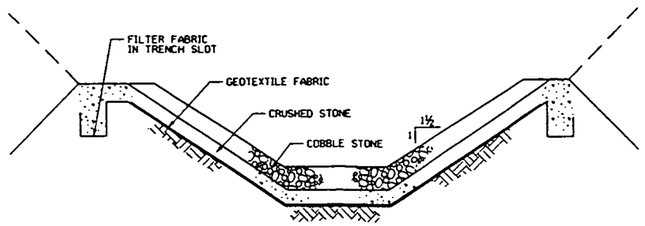
DRAWN BY L.J.GEORGE	DATE 05/29/92	DESIGNER, CHECKED BY	DATE	CHECKED BY T.PICKERING	DATE 07/08/92
PROJECT MGR.	FLOOR			SCALE AS NOTED	CLASS
SUBMITTED FOR APPROVAL	APPROVAL RECOMMENDED			DRAWING APPROVED	
A/E DOE PROJECT NO.	DATE	OPERATING CONTRACTOR	DATE	DOE	DATE
	OPER. CONTR. PROJECT NO. WBS 1.1.1.1.2.2 00-90701	DRAWING NO. SK-G-00703		SHEET NO. G0003	REV. NO. 0



DETAIL 1 N.T.S. — REF G00704 G00718 G00793



DETAIL 2 N.T.S. — REF G00704 G00783 G00793



DETAIL 3 N.T.S. — REF G00704 G00783 G00793

NOTES

3688

REFER DWG NO.	REFERENCE DWG TITLE
SK-G-00718	SITE PLAN AREAS OF CONCERN (FIGURE 2-1)
SK-G-00793	GRADING PLAN (FIGURE 3-1)
SK-G-00783	CROSS SECTIONS (FIGURE 3-2)

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

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CINCINNATI, OHIO

PROJECT NAME
WASTE PIT AREA CONTAINMENT IMPROVEMENTS
OU1/PO34

DRAWING TITLE
CIVIL
DETAILS
(FIGURE 3-3)

DRAWN BY	DATE	DESIGNED/CHECKED BY	DATE	CHECKED BY	DATE
L.J.GEORGE	05/28/92			T.PICKERING	07/08/92

PLANT/BLDG NO.	FLOOR	SCALE	CLASS
		NONE	

SUBMITTED FOR APPROVAL	APPROVAL RECOMMENDED	DRAWING APPROVED
A/E DATE	OPERATING CONTRACTOR DATE	DOE DATE

DOE PROJECT NO.	CM OR CONTR PROJ NO.	DRAWING NO.	SHEET NO.	REV. NO.
	WBS 1.1.1.1.2.2 00-90701	SK-G-00704	G0004	0

16

The ditches next to the Uni-mat® wood mats between Waste Pit 4 and Waste Pit 6, also have little to no drainage pitch. The road directly below the wood mats in this location is radioactively contaminated. To keep the road access open and to seal the contamination, the road is to be completed with additional wood mats and a permatizing system. Drainage in the area will be pitched away from the wood mats (Figure 3-3, Detail 1). Ditches adjacent to the road will be excavated to form a definitive hydraulic channel (at present, the flow meanders over a wide flat area). The excavation will be kept to a minimum. The ditches next to the road south of Waste Pit 4 and Waste Pit 6 have an established drainage pitch. Isolated areas in the ditches are constricted. At another location, a culvert which is used for a temporary road crossing is nearly plugged. The construction planned for this area is to reshape ditches at the constricted locations, and to place a new culvert adjacent to the existing culvert. Ditches in this area need only to be reseeded and covered with jute matting at disturbed areas. The culvert will have rock protection at each end to minimize plugging.

The majority of this work will be done with either a hydraulic backhoe or a backhoe loader. An attachment can be placed at the end of the boom to do required compaction.

Nine-hundred lineal feet of road along the south berm of Waste Pit 5 will be disturbed by adjacent ditch construction. After the drainage ditches have been improved, the road will be regraded as necessary and a drainage pitch of 2% will be established across the road's width. This regrading will be incorporated into the drainage plan shown in Figures 3-1 through 3-3. At completion of the ditch construction and regrading, a three-inch layer of crushed stone will be placed on the road surface as needed and compacted with a vibratory roller.

One layer of Uni-mat® wood mats exists on the road between Waste Pit 4 and Waste Pit 6. Ditch work in this area is needed prior to the start of road improvements. After the ditch construction, the road improvements planned in this area include installation of a top layer of Uni-mat® wood mats. This layer will interlock with the existing wood mats. The Uni-mat® base will then be finished with Uni-mat's® patented process of asphalt permatizing. In this process the wood mats are coated with a liquid asphalt/polymer emulsion. Crushed stone is placed over this emulsion to provide a wearing surface. Crushed stone will be used on the sides and the approaches to the Uni-mat® wood mats to blend the road areas and the road to ditch transitions. These areas and transitions will be graded to drain and compacted with suitable vibratory rollers.

3.2 Correction of Waste Pit 4 South Berm Erosion

3.2.1 Description

The proposed method to correct and contain the erosion damage of the Waste Pit 4 south berm is to reconstruct the ditch at the toe of the berm and provide riprap rock protection in the channel. The purpose of the construction is to provide a proper and durable drainage channel that separates the pit soils from stormwater flow. This will restore stability to the berm and minimize sediment transport.

At present the ditch is approximately three to eight feet in depth. The erosion has created vertical walls in the ditch up to three feet in height. Numerous erosion rills are evident on the slope from the Waste Pit 4 liner to the ditch. Vegetation on the slopes is moderate.

3.2.2 Implementation

A cross section of the ditch is shown in Figure 3-2, Section C. A backhoe or loader backhoe will be the primary piece of equipment for repairing the south berm of Waste Pit 4. The articulated arm of this type of machine is ideally suited for the redistribution and placement of materials required.

All mud at the bottom of the ditch will be stabilized by adding a stabilizing agent such as lime or cement. This material will be brought in 100 pound sacks and added as needed. This additive will be placed in the bucket of a backhoe which will then spread and mix this material into the mud. A tamper attachment will be placed at the end of the boom of the backhoe to do any required compaction. All standing water will be drained from the ditches to the existing stormwater management system prior to the stabilization work.

Compacted fill will shape the channel's section. Suitable off-site material will be needed. Geotextile fabric will be installed on top of the fill. The fabric will be secured to the fill with steel pins. The geotextile fabric will need to be placed by manual labor with assistance from a backhoe. The stone and riprap will then be placed using the backhoe. A four-inch bedding of crushed stone or sand and gravel will be placed uniformly on the fabric. Twelve inches of riprap, Ohio Department of Transportation (ODOT) 601 type D, will be placed on the bedding. Cement grout will be applied over the riprap, mostly at the channel bottom area to fill in the void spaces between the rock pieces.

3.3 Protection of Areas of Stressed Vegetation

3.3.1 Description

Figure 3-4 shows a general cross section of the soil and vegetative cover that will be constructed over areas of stressed vegetation to provide protection from wind erosion. These areas include the Burn Pit and other areas of visibly stressed vegetation on Waste Pits 1, 2, and 3. The purpose of these improvements is to prevent wind erosion and minimize radiation exposure resulting from exposed WPA surface soils. The cover on the Burn Pit is not intended to function as a closure cap for the Burn Pit.

A clean, low to medium plasticity cohesive soil will be used as fill material for ruts and depressions of the ground surface. The fill material will be compacted and graded as necessary for drainage. Topsoil will then be placed, compacted and graded. The areas will be revegetated with grass. The grass will be placed by hydro-seeding, sodding, matting or a combination of these as appropriate. An agronomist will be consulted concerning selection and maintenance of the grass species. Uni-mats® will be placed over the cover to provide access for ongoing remediation traffic. Administrative controls will also be implemented to minimize this traffic. Geotextile filter fabric will also be used at certain locations to provide separation and to promote drainage. In areas of extremely stressed vegetation, geotextile fabric and gravel may be used.

3.3.2 Implementation

The activities described below outline the work that will be undertaken to improve the Burn Pit Area and other areas of stressed vegetation in the WPA.

Data and information from a site investigation will be used to delineate areas of stressed vegetation in the WPA. The investigation will include the following:

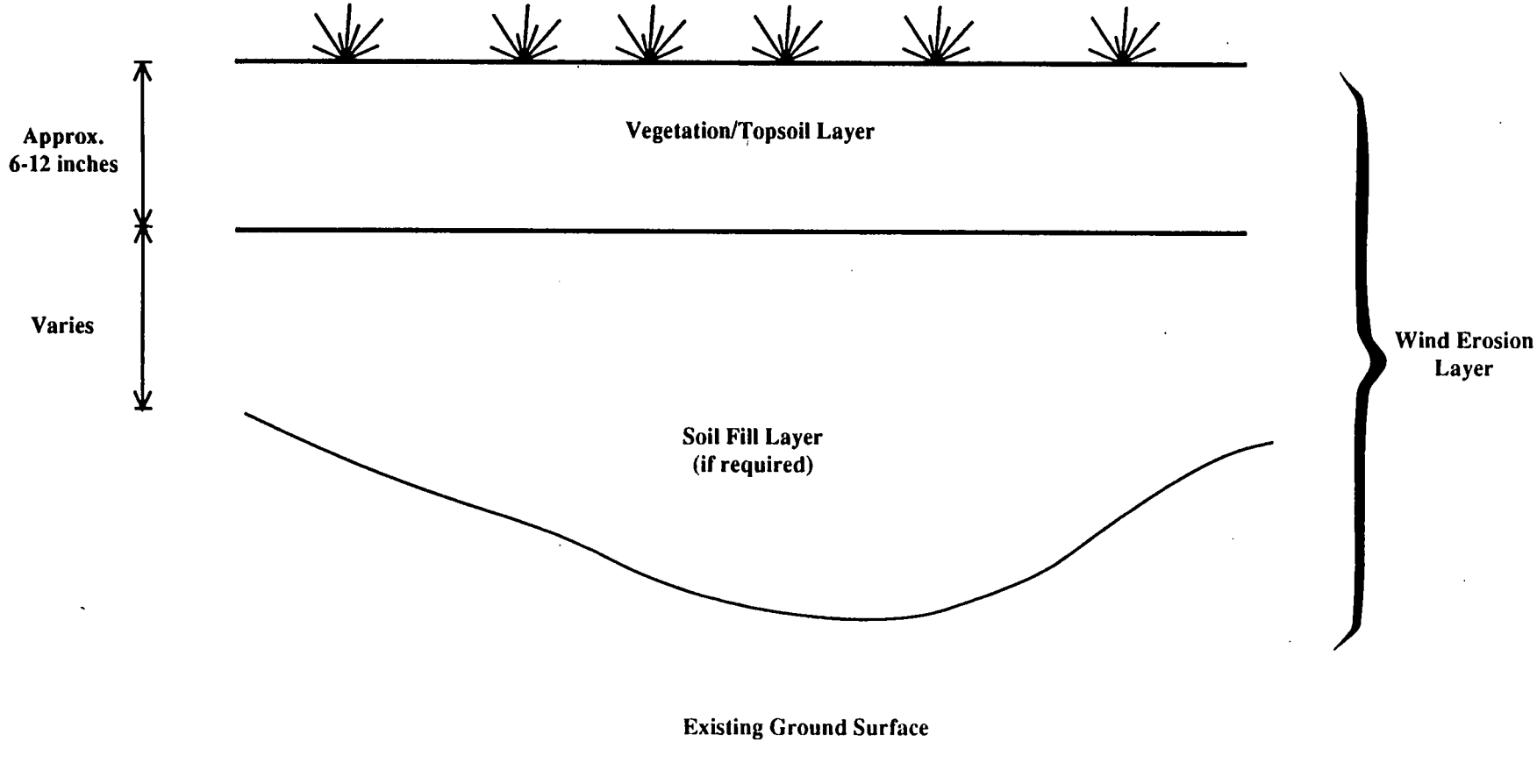
1) Compilation and review of existing data, including recent aerial photographs and radiation surveys of the WPA

2) Site reconnaissance, including field notes, measurements, and sketches describing the stressed vegetation areas of concern

3) Layout and boundary/topographic survey of identified stressed vegetation areas

4) Identification of fill soil and topsoil borrow sources.

Figure 3-4 - Cross-Section of Soil and Vegetative Cover



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Following the site investigation, activities associated with the detailed design effort for the stressed vegetation areas will be conducted. The design process will delineate dimensions, construction materials, construction techniques and sequencing, etc. Design drawings will include a site plan showing existing and proposed features, utility and site support appurtenance plans, detail sheets and other diagrams as required.

Specifications will consist of material specifications and construction specifications. Material specifications will specify the type and make of synthetic product (such as geotextile fabrics) or define a natural product (such as soils and grass seed) in terms of type and/or location. Construction specifications will be primarily performance based.

The areas of stressed vegetation will require preparation prior to construction activities. The preparation may include filling of localized depressions on the ground surface. Fill soil will be placed with a front-end loader and distributed with a dozer. The soil fill will be placed in lifts as required. The soil fill will be compacted in accordance with the design specifications. Correct and uniform soil moisture content is essential for compacting the fill soil to the specified density. Moisture can be added in the borrow area and or the placement area. Moisture will be added with a sprinkler system or other sprinkler device. Moisture application will also be used at the construction site to reduce fugitive dust.

Surface water control will be established to minimize erosion during construction. Construction materials will be staged and stockpiled in designated areas. Contamination control zones and access procedures will be utilized to minimize potential contamination of construction equipment. If geotextiles are to be used in the area, they will be placed prior to topsoil placement.

Topsoil will be placed in lifts and compacted in accordance with the design specifications. The topsoil will be placed with a front-end loader and distributed with a dozer. If gravel is used in lieu of topsoil, it will be placed over the geotextile fabric and compacted in accordance with the design specifications.

To facilitate rapid growth of grasses, the topsoil will be fertilized. An agronomist will be consulted for recommendations concerning the revegetation. Recommendations will include soil conditions, selection of grass species, fertilization, and maintenance. Grass will be placed by hydro-seeding, sodding, or matting as appropriate. Uni-mats® will be placed over routes which require access. Administrative controls will also be established to limit traffic in areas of stressed vegetation.

The work that needs to be done on the Burn Pit and other areas of the WPA will be done in contamination control zones, therefore, it is important that equipment and personnel be minimized. The equipment required will enter the controlled area and not leave until the work in both areas is complete. These units will not travel on the roads until they have been screened and, if needed, decontaminated. Trucks will deliver the required material to a staging area but will not enter the contamination control

areas. A small front-end-loader will take the soils from the staging area to the areas where it is required in the controlled areas. A small to medium sized tracked dozer will do the required spreading and compaction of the soils. Required moisture and dust suppression will be done with either a hydroseeder, a water truck or water tanks on a trailer.

Quality of the revegetation/covering of areas of stressed vegetation will be assured and controlled by imposing material acceptability criteria and performing quality control tests at specified frequencies. Strict material acceptance criteria will be established in the material specifications. Adherence with the established acceptance criteria will be monitored utilizing tests at specified frequencies. Additionally, construction quality and adherence to construction specifications will also be controlled by testing. Compaction tested, as needed, will be done in accordance with American Society for Testing and Materials (ASTM) D698. Tests and inspection of vegetation will be in accordance with the ODOT "Construction and Material Specifications."

SECTION 4

PROGRAM MANAGEMENT

4.1 Responsibilities

The DOE 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 at the FEMP and is 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. WEMCO will be responsible for the implementation of this RAWP. WEMCO will prepare all reports associated with the removal action in a manner consistent with DOE and regulatory guidance. This removal action will be managed by the WEMCO/DOE Operable Unit 1 team to ensure compatibility with the final remedial action selected for Operable Unit 1.

RUST Engineering is a contractor to WEMCO and is in charge of supervising on-site construction. RUST Engineering will also supervise the field activities associated with this removal action.

PARSONS is the Architectural/Engineering firm contracted to WEMCO to provide Remedial Design support for the overall FEMP remediation, and will provide the engineering design for this removal action. This effort includes the evaluation of alternatives for the WPA Containment Improvements and the preparation of this RAWP.

The Construction Contractor is the organization that will perform all field activities. This contractor will be selected through the standard DOE bid and award process.

The US EPA has approval authority for this RAWP.

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

4.2 Schedule

Proposed durations for the design effort and field activities associated with this removal action have been developed and are as follows:

Activity	Duration
Design Effort	21 weeks
Field Activities	23 weeks

The DOE has determined that the WPA containment improvement is a time critical removal action. Implementation of field activities must commence within six months of the issuance of the Action Memorandum. Field activities shall be considered complete when the drainage ditches have been repaired, the road between Waste Pits 4 and 6 has been improved, the Waste Pit 4 south berm has been corrected, and a vegetative cover has been placed over the Burn Pit and other exposed areas in the WPA. Field activities are anticipated to be complete by June 30, 1993. A final removal action report will be prepared, submitted to the US EPA and the Ohio EPA, and included in the Administrative Record.

SECTION 5

REGULATORY AND CONSENT AGREEMENT REQUIREMENTS

5.1 Consent Agreement Requirements

As required under Section IX of the Amended Consent Agreement, the US EPA is to approve the Work Plan prior to the commencement of the removal action. The basic components of the approval procedure for the Work Plan are as follow:

1) The DOE will submit a Work Plan to the US EPA which provides a concise description of the activities to be performed. The Work Plan shall contain a sampling and analysis plan, a quality assurance plan, and a schedule.

2) The US EPA will review the Work Plan and provide comments to the DOE within 30 days following receipt of the Work Plan. The US EPA will consult with Ohio EPA, as required.

3) The DOE will submit a revised Work Plan, addressing US EPA comments, to the US EPA within 30 days following receipt of US EPA's comments. The DOE may extend the 30-day period an additional 20 days by providing notice to the US EPA.

Within 5 calendar days of the US EPA's approval, the DOE shall commence implementation of the approved work plan. The removal action is to be implemented in accordance with the approved work plan and schedule.

The progress of the removal action shall be reported to the US EPA in the monthly progress report required by the Amended Consent Agreement (US EPA 1991).

5.2 Regulatory Requirements

This removal action is being undertaken pursuant to Section IX of the Amended Consent Agreement and, as such, this removal action shall comply with all Applicable or Relevant and Appropriate Requirements (ARARs) to the maximum extent practicable. 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 the ARARs, other federal and state advisories, criteria, or guidance (termed as To-Be-Considered (TBC) may, as appropriate, be considered in formulating the removal action. The ARARs for this removal action are attached as Appendix C. Included with the ARARs (or TBCs) is the strategy for compliance.

SECTION 6

HEALTH AND SAFETY PLAN

This removal action will be performed in such a manner as to be consistent with the project specific Health and Safety Plan which will be prepared prior to the initiation of field activities. The project specific Health and Safety Plan will identify, evaluate, and outline control measures for all potential safety and health hazards which may be encountered during the implementation of this removal action. The plan will also identify training, monitoring, protective equipment, and work practices that will be used to reduce exposure to these hazards. In addition, the plan will identify emergency response actions for hazardous operations. The plan will be consistent with 29 Code of Federal Regulations (CFR) 1910.120, Ohio Administrative Code (OAC) 3745-54-16(A), and the FEMP Site Health and Safety Plan (WEMCO 1990).

Section IX.B of the Amended Consent Agreement states that work plans required by this section will contain a Health and Safety Plan. During the negotiations for the Amended Consent Agreement, the DOE, US EPA, and Ohio EPA agreed that Health and Safety Plans would only be submitted to the regulatory agencies upon written request (WEMCO 1991b). The task-specific Health and Safety Plan for this removal action will be completed and will be available for inspection prior to the initiation of field activities for this removal action.

SECTION 7

SAMPLING AND ANALYSIS PLAN

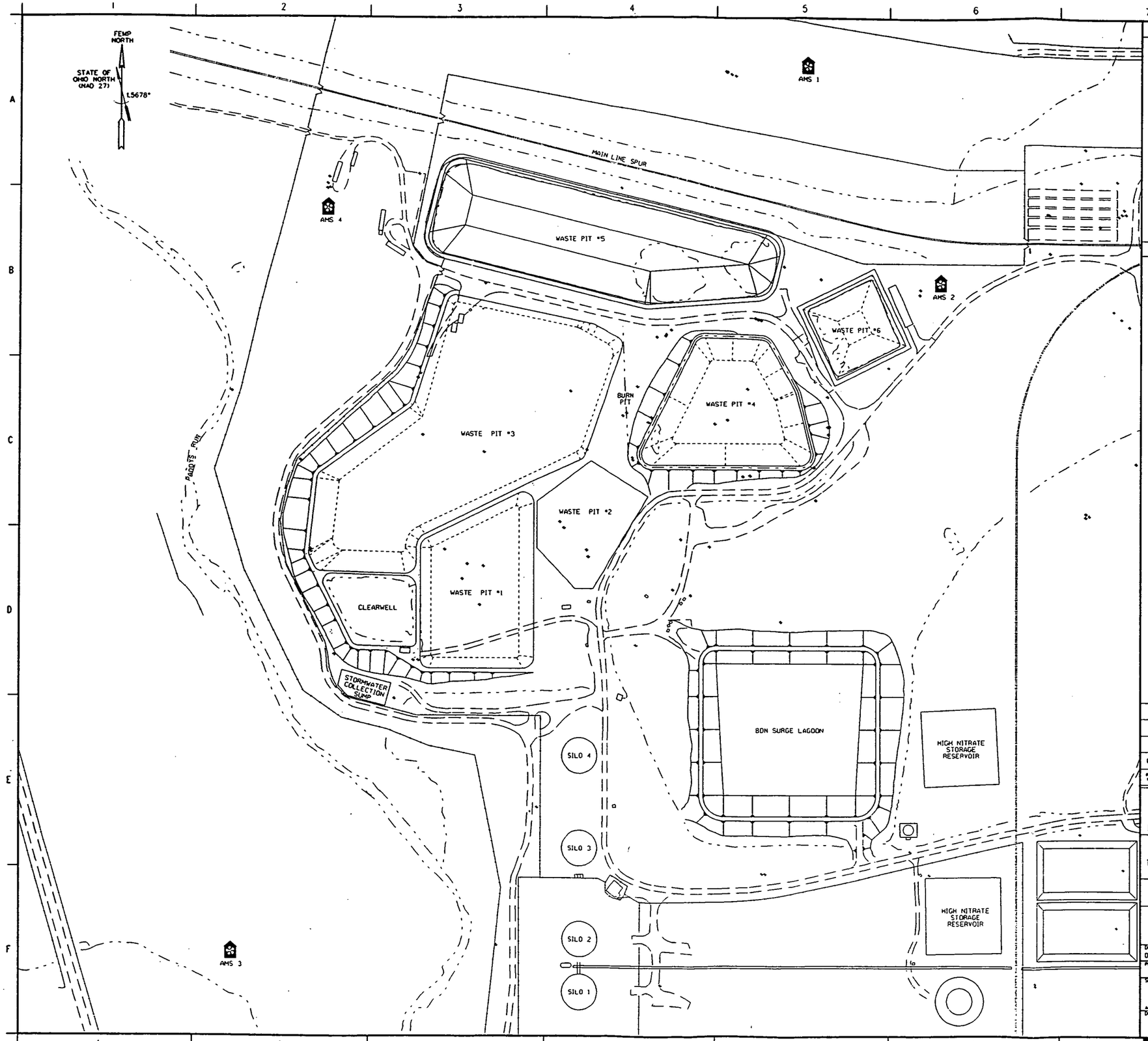
This sampling and analysis plan provides a means to quantify the radioactive airborne particulate emissions from the WPA, verifys that road surfaces in the WPA are not radiologically contaminated, and determines the disposition of excess soil and debris. All sampling activities will be performed in accordance with the *Sitewide CERCLA Quality Assurance Project Plan* (SCQ) (DOE 1992d).

7.1 Air Monitoring

As part of the Radiological Environmental Monitoring Program (REMP) sitewide air monitoring program, air filter samples are collected to provide quantitative results of airborne radioactive particulate emissions to the surrounding area. There are currently 20 high-volume air monitoring stations (AMS) in operation around the FEMP. Four of the AMS are located directly around the WPA (Figure 7-1). Table 7-1 summarizes the air monitoring plan that will be followed during this removal action. At each AMS, air is continuously drawn through a microfiber filter which is changed weekly, according to the procedures established in the REMP Air Monitoring Procedure, EM-RM-001, which has been provided as Appendix D. All air filter samples will be handled according to the chain-of-custody program which is presented in Section 7 of the SCQ. The filters from the air monitoring stations will be analyzed for Total Uranium and Gross Beta in accordance with the analytical methods presented in Attachment I of the SCQ. The air filters will also be analyzed for Total Suspended Particulates according to the WEMCO Gravimetric Determination of Airborne Particulates Procedure which has been provided as Appendix E. Air monitoring from the four AMS located near the WPA will be used to establish the effectiveness of the removal action. Air filter samples taken prior to the start of the removal action field activities will be compared to air filter samples taken after the completion of the removal action. The results of the air filter samples from the four AMS located directly around the WPA will be included in the final removal action report.

7.2 Road Monitoring

A radiological survey will be performed on the roads in the WPA prior to any field activities. This survey will be performed by FEMP radiological safety site technicians according to the *Radiological Safety Radiological Contamination Surveys Procedure*, SP-P-35-023, which has been included as Appendix F. After this removal action is complete, a radiological survey of the roads will be performed to verify that the road surfaces are not radiologically contaminated and that the access controls established for this project can be eliminated.



NOTES

LEGEND

AIR MONITORING STATION (AMS)

PRELIMINARY
NOT FOR CONSTRUCTION

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

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 NAME
WASTE PIT AREA CONTAINMENT IMPROVEMENTS
OU1/P054

DRAWING TITLE
ENVIRONMENTAL SITE PLAN
AIR MONITORING STATIONS (FIGURE 7-1)

DRAWN BY	DATE	DESIGN/CHECKED BY	DATE	CHECKED BY	DATE
D.AKENNEDY	08/19/92				

PLANT/BLDG. NO. | FLOOR | SCALE 1"=88' | CLASS

SUBMITTED FOR APPROVAL | APPROVAL RECOMMENDED | DRAWING APPROVED

A-E DATE | OPERATING CONTRACTOR DATE | DOE DATE

DOE PROJECT NO.	OPER. CONTR. PROJ. NO.	DRAWING NO.	SHEET NO.	REV. NO.
	VBS 1.1.1.1.2.2 00-90701	SK-X-00884		0

Table 7-1 - Air Monitoring Plan

Total Number of Monitoring Locations Around the Waste Pit Area	Monitoring Frequency	Environmental Media	Laboratory Analyses
Four (4)	Continuous - Air Filters Changed Weekly	Air	1. Total Uranium[1] 2. Total Suspended Particulates[2] 3. Gross Beta[3]

1. See FM-RAD-0120 in Attachment I of the SCQ for analytical method.
2. See Appendix E for analytical method.
3. See FM-RAD-0130 in Attachment I of the SCQ for analytical method.

7.3 Water Monitoring

Removal Action 2 is addressing the WPA stormwater runoff control. The stormwater from the WPA is collected by the stormwater collection sump. The water is then be pumped to the BDN-ETS IAWWT where it is treated and sampled prior to discharge through Manhole 175 to the Great Miami River. Once the stormwater reaches the stormwater collection sump, it is outside the scope of Removal Action 22, and, therefore, the water will not be sampled as part of Removal Action 22.

7.4 Soil and Debris Monitoring

Excess soil and debris may be generated during construction activities to improve specific drainage ditches in the WPA. This excess material will be handled in accordance with the Removal Action 17 Work Plan (DOE 1992b). Prior to any field activities, WEMCO will conduct an assessment of the contaminants that may be contained within the drainage ditches and will complete a Material Evaluation Form (MEF), SSOP-0002 (WEMCO 1991a). An informational copy of the MEF has been provided as Appendix G. The assessment will include a review of existing analytical data, a review of historical facility information, and process knowledge. Historical data includes any documented spills and releases, and past sample results. Process knowledge includes the types of raw materials utilized, operation and waste management procedures, and construction materials. The MEF will be used to determine the disposition of the excess soil and debris.

During excavation activities, hand-held field instruments will be used to perform radiological surveys and chemical vapor screening prior to and during soil and debris removal operations. The results from the field screening activities will be used to confirm the historical and process information used to complete the MEF.

All excess material will be containerized and handled according to the MEF. Containers will be placed in a staging area where they will be sampled and await results of the analyses. Each sample will be analyzed for the parameters listed in Table 7-2. From this analytical data, the MEF will be updated as necessary and the final disposition of the excess material will be determined.

Soil samples will be collected with trowels, shovels, thief samplers, or other coring devices. Soil samples will be taken in accordance with Appendix K of the SCQ. Equipment used for sampling will be decontaminated in accordance with Appendix K of the SCQ prior to taking any samples. All soil samples will be handled in accordance with the chain-of-custody program in Section 7 of the SCQ to ensure the integrity of the samples. Sample containers and preservation requirements will be followed as specified in Appendix K of the SCQ. The samples will be stored at 4 degrees C.

Table 7-2 - Methods for Determining Concentrations of Hazardous Constituents

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
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
Polychlorinated Biphenyl	8080	Gas Chromatograph

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

Each container of excess material will be sampled and analyzed for PCBs and the hazardous constituents listed in Table 7-2. Samples that are collected to facilitate a hazardous waste determination will be prepared in accordance with TCLP, FM-MISC-0010, which is contained in Attachment I of the SCQ. Hazardous waste constituents will be analyzed according to the US EPA Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846) procedures (US EPA 1988). PCBs will be analyzed in accordance with Chlorinated Pesticides/PCBs by Gas Chromatography, FM-ORG-0030, which is contained in Attachment I of the SCQ. Table 7-2 provides a list of US EPA approved methods that may be used to determine concentrations of hazardous constituents. The analytical results will be validated and reported in accordance with Section 11 of the SCQ.

SECTION 8

QUALITY ASSURANCE

The overall quality assurance program is conducted under the requirements set forth in the Quality Assurance Program Description (QAPD), RM-0012 (WEMCO 1991c). The QAPD was developed in accordance with the criteria specified in the American National Standards Institutes (ANSI)/American Society of Mechanical Engineers (ASME) NQA-1, US EPA Guideline QAMS-005/80, and DOE Orders 5700.6c, 4700.1 and 5400.1.

The Consent Agreement, Subsection X.B, requires the inclusion of a Quality Assurance (QA) plan within the Removal Action Work Plan. This QA plan addresses the specific actions required to implement the removal action consistent with the requirements of the QAPD. The QA requirements identified for this removal action include procedures for collecting and analysis of waste and environmental samples, and conducting field radiation surveys.

The specific QA procedures are already provided in the RI/FS Quality Assurance Project Plan (QAPjP) (DOE 1988), the Sitewide CERCLA Quality Assurance Project Plan (SCQ) (DOE 1992d), WEMCO Fernald Procedures, and Test Methods for Evaluating Solid Waste (SW-846) (US EPA 1986), which are hereby incorporated as part of this Work Plan reference. No additional QA requirements or deviations have been identified. The US EPA is in the process of reviewing the SCQ, which addresses all FEMP sampling and analysis activities. On approval, the SCQ will be followed in lieu of the RI/FS QAPjP.

The FEMP Quality Assurance/Quality Control (QA/QC) group will be responsible for periodically monitoring and conducting surveillances at the project site to verify that all measurements are conducted to ensure the quality of the samples collected in accordance with the SCQ.

SECTION 9

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APPENDIX A

REMOVAL SITE EVALUATION ADDENDUM

REMOVAL SITE EVALUATION ADDENDUM

WASTE PIT AREA CONTAINMENT IMPROVEMENT

(Previously identified as
The Waste Pit Area Roads
and Exposed Surfaces)

Fernald Environmental Management Project
U. S. Department of Energy

June 1992

Introduction

A Removal Site Evaluation was completed in May 1991 for the waste pit area roads and exposed surfaces. The four areas of primary concern in this RSE were:

- the immediate area between pits 4 and 6,
- an area south and east of pit 2,
- the area east of the waste pit area, and
- the cover of pit 3.

A subsequent action memorandum documented that a removal action was not appropriate for these areas.

This addendum to the original RSE is being prepared to include newly identified areas of concern. These areas are correction of Pit 4 south berm erosion, protection from Burn Pit wind erosion, and improvements to vegetation cover on pits. These areas were identified in RI/FS planning meetings in the fall of 1991 as areas in need of attention. It has been determined that a removal action is necessary to address the threat posed by the addition of these areas to the existing RSE for Waste Pit Area Roads and Exposed Surfaces.

A summary of these newly identified areas follows. In addition, this addendum also includes a discussion of the Weston Road area, which is undergoing investigation, but is not included as part of the removal action.

Pit 4 South Berm Erosion

Routine inspections of the waste pit area have identified areas of erosion along the southern berm of pit 4. There is an active drainage ditch which is located between the waste pit road and this southern berm. Stormwater crosses beneath the waste pit road near the southwest corner of pit 4. Several cubic yards of rip-rap have been placed in the area at the southwest corner of pit 4 and the rip-rap has mitigated any further erosion in this area. However, the remainder of the southern perimeter of the pit continues to be exposed to stormwater drainage.

The erosion appears to have been caused by stormwater runoff from the surface liner of pit 4, as well as by high rates of stormwater flow through the drainage ditch. The area of impact presently extends approximately two to three feet into the southern face of the pit 4 berm in some areas. The erosion of the berm prohibits establishment of substantial vegetative growth on this area of the berm.

Groundwater monitoring wells 1021 and 2021 are located at the southern berm of pit 4. Results from these wells have consistently shown elevated levels of uranium and other contaminants. There is a possibility that contamination in these wells is related to the berm erosion.

It is clear from the visual inspections of the berm that stormwater erosion has the potential to cause the migration of contamination from pit 4 to the surrounding environment. The potential for migration of contamination warrants the inclusion of this area in the RSE addendum.

Burn Pit Wind Erosion

The Burn Pit area has no vegetative cover. There is exposed debris in this area. The cover of the burn pit has previously been used as a roadway through the waste pit area. There is a potential for fugitive dust emissions from both wind erosion and traffic across the pit surface, and the potential for contaminant migration from the exposed debris.

The CIS data was reviewed to determine the level of contamination on the surface of the burn pit. The data from the 0 to 1 foot portion of the six borehole samples is presented below.

Borehole No.	U-238 (pCi/g)	Th-232 (pCi/g)	Ra-226 (pCi/g)
7-01	7.0	1.6	2.1
7-02	10.6	3.1	1.1
7-03	191	4.5	1.2
7-04	223	2.7	1.5
7-05	10.3	1.4	0.8
7-06	72.9	1.8	2.2

The above data supports the potential of this area to contribute to fugitive emissions from the waste pit area. The potential for migration of contamination warrants the inclusion of this area in the RSE addendum.

Vegetation Cover on Pits

There are several areas of the surface of Pits 1, 2, and 3 which currently contain no vegetation cover. The exposed surface is estimated to be less than 10 % of the total surface area. The reason for the lack of vegetation in these areas is not clearly understood. Possible explanations include; higher than average radiation levels in these areas, migration of waste pit contamination to the surface of the pits, periodic standing water, and surface water drainage.

The lack of vegetation on these areas may result in increase contamination of stormwater run-off from these areas and possible fugitive dust windbourne emissions from the surface (if higher levels of surface contamination exist). The potential for migration of contamination warrants including this area in the RSE addendum.

Weston Road Area

On April 13 and 14, and May 16 and 17, radiological surveys were conducted on portions of the dirt roadway which runs from south to west on the border of the Waste Pit Area (commonly known as the Weston Road). Preliminary results from the surveys are shown in the table below.

DATE	AREA	Highest DPM/100 cm^2 Beta/Gamma	COMMENTS
4/13/92	Area near dirt pile and near gate W-31	42,000	Highest value in dirt, range 10,000 - 42,000
4/14/92	In run-off ditch near gate W-31	18,000	Highest value on acid brick, range 2,000 - 18,000
5/16/92	Roadway from entry to WPA to Gate W-31	< MDA	All values less than 100 cpm above background
5/17/92	Roadway from entry to WPA to Gate W-31	< MDA	All values less than 100 cpm above background

Most areas surveyed were below minimum detectable activity (MDA). Compared to the levels of radiological contamination in the waste pit area, as discussed in the original RSE, these above results do not indicate that an imminent threat exists as a result of this contamination.

Further, the potential for migration of this contamination is mitigated by the recently completed Stormwater Runoff Control Removal Action. Stormwater runoff from this area is now captured and collected and routed through the stormwater retention basin system. This water no longer routinely flows to Paddy's Run.

Even though a response under CERCLA is not considered appropriate at this point, additional sampling and analysis (including a subsurface investigation) will be performed in this area. The results of this sampling effort will be added to the administrative record for this removal action.

APPENDIX B

SUMMARY OF THE ALTERNATIVES EVALUATION

APPENDIX B

SUMMARY OF THE ALTERNATIVES EVALUATION

An alternatives evaluation was performed using the methodology defined in the outline of the US EPA Engineering Evaluation/Cost Analyses (EE/CA) Guidance memorandum (US EPA 1988). Pursuant to Phase III of Section IX of the Amended Consent Agreement, the DOE has committed to a removal action. The no action alternative was eliminated from the consideration of alternatives in order to be consistent with the US EPA EE/CA Guidance (US EPA 1988). The following subsections provide a brief summary of the analyses for each area of concern which show the justification for each alternative chosen.

B.1 Containment of Specified Contaminated Soil Areas

In order to improve the containment of specified contaminated soil areas, selected drainage ditches in the WPA and the road between Waste Pits 4 and 6 need to be improved (see Figure 2-1). To improve the road between Waste Pits 4 and 6, clean fill, a fabric and macadam pavement, and the placement of Uni-mats® was considered. Since the road already has one ply of Uni-mats® covering it, the most effective alternative would be to complete the Uni-mat® system by installing the second layer of wood mats on the road. The following subsections provide a brief summary of the evaluation of the alternatives to correct the drainage in the ditches. From this evaluation, the proposed alternative to improve the drainage ditches, in order to contain contaminated soil areas, is to regrade the ditches and then use culverts and nestables where required.

B.1.1 Regrading the Ditches

This alternative considers grading and seeding the ditches. The ditches in the WPA have pools of stagnant water and areas of inadequate flow (i.e. evidence of wet sediment, mud in ditches). These areas appear to correlate to areas which show elevated levels of contamination, so the ditches need to have a positive drainage grade re-established. A field survey of the existing ditches will be used to determine the new positive drainage grade. Once the ditches are regraded, the water will flow to the stormwater collection sump south of the Clearwell. The collected stormwater is pumped to the BDN-ETS IAWWT where it is treated. This treated water is sampled prior to being discharged to Manhole 175 which outfalls to the Great Miami River. For this alternative, the wet sediment in the ditches will be stabilized. The ditches would be regraded, as necessary, to obtain the desired pitch and proper drainage. A material balance (a balance of the material cut to the material needed for fill) would reduce the need for off-site material. Finally, the ditches will be seeded with vegetation which would be suitable to resist erosive water velocities encountered.

A material balance would be difficult to achieve in the field. The soils in the ditches could be difficult to work with as they may be very fluid. Bentonite or cement may have to be added in order to stabilize this material. Once the ditches are seeded and a ground cover of vegetation is established, the potential for airborne migration of contaminants will be reduced. Routine maintenance will be necessary, and therefore maintenance costs will be moderate. This alternative would have a low cost for implementation.

B.1.2 Lining of the Ditches

A metal ditch liner, called a nestable, will be used for this alternative. For use as a roadside ditch at most locations at the site, this nestable will require only limited bedding. The shallow ditches would be reshaped to accept the liner. As mentioned previously, regrading to achieve a positive drainage flow will be necessary. The sides of the area next to the nestable would be graded to blend with the metal ditch liner and given an appropriate grass or stone cover.

Once implemented, this alternative would effectively contain contaminants. Lining the ditches would add only a minimal amount of material to the WPA, and therefore, would be consistent with the final remedial action. This alternative would be easy to maintain and implement, but would take some time to complete. The cost to implement this removal action would be moderate, while maintenance costs would be low.

B.1.3 Placement of Rocks/Cobblestones

Rocks or cobblestones would be placed in the ditches to provide a durable cover. A drawback with rock protection is that as the ditch subgrade softens from water flow the rocks sink into the mud. To prevent this, geotextile fabrics would be used to keep the rock and the subgrade segregated. Rock protection in the ditches protects the flow channel from damage by limiting erosive velocities and providing a durable cover. An optional grout spread over the rock would reduce required maintenance and extend the life of this alternative. Once the rock protection is in place, the affected areas next to the completed ditch would be fertilized and seeded.

This alternative would effectively reduce the mobility of the contaminants and would be easy to implement. During construction, the mobility of the contaminated soils would be minimal. It would add material that would need to be treated by the final remedial action. Occupational hazards would be low, and worker contact with contaminated material would be minimal. This alternative would be easy to maintain and reliable. Construction and maintenance costs would be moderate.

B.1.4 Culverts

Culverts would be placed at road crossings and where space restrictions will not permit an open ditch. To prepare for the installation of the culvert, the ditch would be regraded, and the wet sediment would be stabilized with cement, lime or bentonite. The pipe bedding and fill would then be placed, and the pipe would be installed at the proper pitch. Backfill and inlet and outlet protection would be placed around the pipe.

Culverts would not be practical in all of the ditches because of the lengths, flat slope of the area, and the cost, but may be necessary in certain locations. This alternative would create additional waste for final remediation. Once installed, this alternative would be very reliable and easy to maintain. This alternative would have a high cost to install but would have a low cost for maintenance.

B.2 Correction of Waste Pit 4 South Berm Erosion

A summary of the evaluation of alternatives considered for the correction of the Waste Pit 4 south berm erosion is contained in the following subsections. From this alternative, the chosen alternative is to repair the Waste Pit 4 south berm by utilizing riprap.

B.2.1 Riprap Channel Protection

Riprap would be placed at the toe of the berm and partially up the slope. The ditch would be regraded and off-site fill material would be placed to shape the ditch into a channel configuration. Soft mud would be stabilized with additives (i.e. lime, cement, or bentonite). A filter fabric would be installed over the reshaped ditch and toe. An aggregate bed overlain with riprap would follow. This riprap would then be slush grouted to improve channel hydraulics, maintainability, and durability.

The riprap would effectively encapsulate the contaminated ditch which would contain contaminants and effectively reduce erosion of the berm. During construction activities, there would be little mobility of contaminated soils. The occupational hazards during implementation would be minimal. Additional material would need to be added, thereby increasing the material which would need to be treated during the final remedial action. This alternative is readily constructible and would be easy to maintain with a low cost for both implementation and maintenance.

B.2.2 Culvert Pipe

A culvert pipe with erosion controls at the inlet and outlet would be installed. A hydraulics and hydrology study of the immediate watershed area would be needed to assess the feasibility of this alternate. Construction would involve the following:

1) Regrading of ditch and stabilization of mud
2) Placement of pipe bedding and fill
3) Erection of headwalls and riprap at inlet and outlet
4) Vegetation of affected areas.

Runoff from the Waste Pit 4 cover would need to be channelled to the culvert's inlet or outlet or directed into a catch basin connected to the culvert.

This alternative would effectively reduce erosion of the south berm. A hydrology study would need to be done to assess feasibility of installation. Occupational hazards would be moderate because workers would need to work in areas of contamination to install pipe and headwalls. This alternative would be very reliable but would add a considerable amount of material to the final action. It would have high construction costs but would have low maintenance costs.

B.2.3 Ditch Liner

Various types of ditch linings are available for this alternative evaluation. A metal ditch liner, called a nestable, was selected for use. Other types were not selected for the following reasons:

1) Vegetation and erosion mats - not effective containment and would have high maintenance costs in areas close to construction traffic

2) Concrete or asphalt lining - labor intensive construction and would have high construction costs.

A metal nestable is basically a half piece of culvert pipe. The flow principles are similar to an open ditch. Generally the installation would progress as follows:

1) Minor ditch regrading and mud stabilization
2) Placement of pipe bedding and fill
3) Nestable installation
4) Placement of riprap at ends of nestable
5) Vegetation of affected areas.

This alternative would effectively reduce erosion of the south berm. A study of the areas hydrology would be required to assess feasibility of installation. A considerable amount of material would be added which would increase the amount of material to be treated during the final remedial action. This alternative would be limited in its ability to handle large flows. Workers would need to work in a contaminated zone during fabric and nestable installation. This alternative provides a long term solution with little maintenance. Implementation costs would be moderate, while maintenance costs would be low.

B.3 Protection From Burn Pit Wind Erosion

The following subsections provide a summary of the analyses for the protection of the Burn Pit from wind erosion. The proposed alternative to protect the Burn Pit is to place a soil cap and vegetative cover on it.

B.3.1 Soil Cap and Vegetative Cover

A soil with a high clay content would be placed at the Burn Pit, compacted and graded to form a cap. Topsoil would then be placed and revegetated with grass. Grass would be placed by seeding, sodding or matting as appropriate. An agronomist would be consulted for vegetative cover design.

Conventional construction techniques would be used to construct a cap with a vegetative cover over exposed and unvegetated areas which would provide an effective barrier to prevent fugitive dust emissions and reduce erosion. This alternative would tend to be the most reliable in the long term due to its construction with all natural materials. This technique would require the largest volume of materials compared to the other alternatives and also the largest construction effort in terms of construction equipment and materials handling. Wood mats would be used to obtain access to the areas for vehicles. This alternative may require more extensive grading than other alternatives, thus potentially increasing occupational hazards during construction activities. Also, it may require a longer time to construct than the other alternatives. After completion, it would require a minimal amount of maintenance. The construction costs of this alternative would be high while the maintenance costs would be low.

B.3.2 Synthetic Cover

The burn pit area would be graded and covered with a low permeability flexible geomembrane synthetic cover. Testing of soils and the geomembrane would be required. Quality assurance and quality control measures associated with the geomembrane would be required in addition to those associated with the conventional construction activities.

Using a synthetic geomembrane to cover the Burn Pit would be effective in preventing fugitive dust emission and reducing erosion. A specialized, skilled labor force would be required to perform the installation. As the geomembrane ages, its associated maintenance would increase. With a geomembrane cover installed, the Burn Pit would be unavailable for future remediation traffic, storage or staging. The construction costs would be moderate, and maintenance costs would be moderate to high.

B.3.3 Filter Fabric and Vegetative Cover

The burn pit would be graded and covered with a geotextile filter fabric. The filter fabric would then be covered with a layer of topsoil and revegetated with grass. The filter fabric would function to provide containment and separation between the burn pit soils and the topsoil. Additionally, the filter fabric would function to assist in drainage of the area. An agronomist would need to be consulted for vegetative cover design.

Utilizing a geotextile filter fabric and vegetative cover provides another effective means to reduce fugitive dust emission and erosion. Due to the less durable nature of this alternative, Uni-mats® would need to be placed over it to allow vehicle traffic over the area to access the monitoring wells. As with the geomembrane, testing of soils and the geotextile fabric would be required. Quality assurance/quality control measures similar to those required for the geomembrane would be necessary. The cost to implement this alternative would be moderate. Once completed, the alternative would require minimal maintenance, and maintenance costs would be low.

B.3.4 Filter Fabric and Gravel

The Burn Pit would be graded and covered with a geotextile filter fabric. The filter fabric would then be overlaid with gravel. The filter fabric would function to provide containment and separation between the burn pit soils and the gravel. Additionally, the filter fabric would function to assist in drainage of the area.

Utilizing a geotextile filter fabric and gravel cover would provide a reduction of fugitive dust emissions and erosion, though probably less effectively than the other alternatives. Advantages of using the gravel instead of a vegetative cover include increased durability and drought resistance. Additionally, gravel may be more conducive to soil decontamination techniques that may be employed during the final remediation. After completion, this alternative would require routine maintenance. Construction and maintenance costs would be moderate.

B.4 Improvements to Vegetation Cover on the Waste Pits

The alternatives evaluated for the improvements to the vegetation cover on the waste pits are presented in the following subsections. Because of the different areas of stressed vegetation around the WPA, both topsoil and revegetation, and filter fabric and gravel will be utilized on a case by case basis.

B.4.1 Topsoil and Revegetation

Topsoil would be placed at areas of stressed vegetation and graded. Grass would be placed by seeding, sodding or matting as appropriate. An agronomist would need to be consulted for selection of appropriate grass species. A geotextile filter fabric might also be utilized at certain locations to provide separation and improve drainage.

Improvements utilizing topsoil and revegetation would provide an effective means to prevent fugitive dust and minimize erosion. The alternative would be relatively easy to implement. A geotextile filter material to improve drainage could be employed in localized areas where drainage is a stress factor on the vegetation. The reliability of this alternative would depend on the amount of vehicle traffic. This alternative would have low implementation and maintenance costs.

B.4.2 Filter Fabric and Gravel

The areas of stressed vegetation would be graded and covered with a geotextile filter fabric. The filter fabric would then be overlaid with gravel. The filter fabric would function to provide containment and separation between the underlying soils and the gravel. Additionally, the filter fabric would function to assist in drainage of the area. The gravel may be more conducive to decontamination techniques for final remediation than soils.

The filter fabric and gravel alternative would be effective in minimizing airborne emissions and has the advantage of being drought resistant and durable. This alternative is desirable for heavily travelled areas. This alternative would require testing and quality assurance/quality control. Occupational hazards would be minimal. Costs to construct and maintain would be low.

APPENDIX C

WPA CONTAINMENT IMPROVEMENTS TABLE OF ARARs/TBCs

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Emergency Planning	All personnel must have immediate access to the following emergency equipment whenever hazardous waste is being handled: (1) an internal communications or alarm system (voice or signal), (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. All required emergency equipment must be tested and properly maintained. Arrangements must be made with the local authorities to ensure proper emergency planning procedures. Procedures need to be consistent with existing arrangements. 40 CFR 265 Subpart C {OAC 3745-65-30 to 37} [Applicable]	A site-wide internal communication/alarm system currently exists. Two-way radios will be provided as required. Portable fire extinguishers will be provided as required. The existing site-wide spill control and decontamination equipment will be available to respond to any incidents.
Emergency Planning	A Contingency Plan and Emergency Procedures are to be developed for the removal action in accordance with 40 CFR 265 Subpart D. The emergency procedures will include procedures for notifying off-site officials as required by 40 CFR 265.56(d) in the event of a situation which could threaten human health or the environment. 40 CFR 265 Subpart D {OAC 3745-65-50 to 56} [Applicable]	The existing Interim Status Contingency Plan and Emergency Procedures will be followed for any hazardous waste release associated with the removal action.
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 of radioactive material into sanitary sewage in accordance with 10 CFR 20.2003. The dose in unrestricted areas is limited to 2 mrem in 1 hour. 10 CFR 20.1301 [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 all DOE sources of radiation. DOE Order 5400.5, Chapter II (1)(a) [To Be Considered]	This removal action will be implemented to minimize the potential release of radionuclides. Compliance will be demonstrated by site-wide environmental monitoring (including air, soil, and groundwater). Reports summarizing the site-wide monitoring results are submitted to the US EPA annually.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Training	All personnel must be trained within six 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 40 CFR 265.16(a) are fulfilled. 40 CFR 265 Subpart B {OAC 3745-65-16} [Applicable]	Employees who will be working on this removal action will receive RCRA training and OSHA training (29 CFR 1910.120), as required per the existing site-wide training program.
Waste Analysis	Detailed chemical and physical analysis of a representative sample must be obtained prior storage of any hazardous 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 265.13. 40 CFR 265.13 {OAC 3745-65-13} [Applicable]	All hazardous waste will be stored according to the approved Removal Action 17 Work Plan for the Improved Storage of Soil and Debris (DOE 1992b).
Worker Protection (Hazardous Substances)	Employers shall develop and implement a written safety and health program for their employees involved in hazardous waste operations. 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 FEMP site-wide Health and Safety Plan (WEMCO 1990). As required by 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
Worker Protection (Radiation)	The occupational radiation doses specified in 10 CFR 20, Subpart C shall be followed. In addition, the radiation survey and monitoring requirements, the administrative controls for restricted areas, and other precautionary procedures identified in 10 CFR 20, Subparts D to J shall be followed. Although the radiation protection standards promulgated under 10 CFR 20, 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. These standards are mandatory after January 1, 1993 with early compliance encouraged. 10 CFR 20, Subpart C to J [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, radiation surveys and monitoring, and administrative controls will be identified in the task-specific health and safety plan developed for the Remedial Action Work Plan.
Security Fencing	A physical barrier (i.e., 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 remediation 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 265.14(c). 40 CFR 265 Subpart B {OAC 3745-65-14} [Applicable]	The fence currently surrounding the FEMP is adequate to restrict access to the waste pits. Warning signs (indicating the potential presence of hazardous waste) are posted at each entrance to the waste pit area.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Drainage System and Erosion Controls	The earthwork rules and regulations issued by the Hamilton County Department of Public Works state that temporary and/or permanent erosion and sediment control features and devices shall be designed and constructed in accordance with the State of Ohio Temporary Erosion Control Specifications. Hamilton County Earthwork Regulations [To Be Considered] Drainage control provisions of DOE Order 6430.1A are to be followed. DOE Order 6430.1A [To Be Considered]	The drainage system will be sized to handle the peak flows and runoff volumes from a 25-year storm event. Drainage system and erosion controls will also comply with the Standard Construction Drawings (MC-11) and "Construction and Materials Specifications" issued by the State of Ohio Department of Transportation, Bureau of Location and Design. Drainage and erosion controls will be in place during the OU1 remediation activities, including the construction period. Calculations and design drawings will be prepared for the drainage system.
HWMU Surface Impoundments Dike Stability	All earthen dikes of a surface impoundment, which is a Hazardous Waste Management Unit (HWMU) under interim status, must have a protective cover, such as grass, shale, or rock to minimize wind and water erosion and to preserve their structural integrity. 40 CFR 265.223 {OAC 3745-67-23} [Applicable]	Waste Pit 5 is a surface impoundment under interim storage which contains hazardous waste. Once Removal Action 22 is complete, all of the dikes of Waste Pit 5 will be covered with vegetation to preserve the structural integrity of the dike.
HWMU Surface Impoundments Inspections	The owner or operator of surface impoundments that store hazardous waste must inspect the surface impoundment, including dikes and vegetation surrounding the dike, at least once a week to detect any leaks, deterioration, or failures in the impoundment. 40 CFR 265.226 {OAC 3745-67-26} [Applicable]	Waste Pit 5 is a HWMU under interim status. A Maintenance Procedure for the inspection of Waste Pit 5 is currently being prepared by WEMCO as part of Removal Action 18.
HWMU Landfills Operating Requirements	The owner or operator of a landfill containing hazardous waste which is subject to dispersal by wind must cover or otherwise manager the landfill so that wind dispersal of the hazardous waste is controlled. 40 CFR 265.301 {OAC 3745-68-02} [Applicable]	Waste Pit 4 is classified as a landfill which contains hazardous waste. Waste Pit 4 was closed under an approved "interim" closure plan, and a RCRA approved cap was placed on the pit. This removal action will not interfere with this cap.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Air Discharges - Nuisances & Fugitive Dust	The emission or escape into open air from any source whatsoever, of smoke, ashes, dust, dirt, grime, acids, fumes, gases, vapors, odors, or any other substances, 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 [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 or 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 the removal action using standard construction practices such as water sprays.
Air Discharges - NAAQS	The National Ambient Air Quality Standards for lead and particulate matter will be followed according to 40 CFR 50.6 and 40 CFR 50.12. 40 CFR 50.6 and 50.12 {OAC 3745-71-02} [Relevant and Appropriate]	The potential for emissions will be controlled during the removal action by using standard construction practices such as water sprays. A program for monitoring particulate matter in the ambient air is already established for the FEMP.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Air Discharges - 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. Modelling and sampling procedures are specified in 40 CFR 61.93. An annual report must be submitted to US 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 calculations, 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 {OAC 3745-54-94 & 95} [Applicable] DOE Order 5400.5 Chapter I [To Be Considered] The annual average radionuclide concentrations in air effluents are to be controlled so that the levels specified in Appendix B, Table II of 10 CFR 20 (Sections 20.1001 to 20.2401) are not exceeded. 10 CFR 20.1302(b) [Relevant and Applicable]	Ambient air monitoring will be conducted at the FEMP using the existing high-volume air monitoring stations which are part of the radiological environmental monitoring program. The results of this monitoring program are provided to the US EPA on an annual basis. The results from the four high-volume air monitoring stations which are located around the waste pit area will be incorporated into the Removal Action 22 Final Report, and will be placed in the Administrative Record.

CATEGORY	REGULATORY REQUIREMENTS	IMPLEMENTATION STRATEGY
Air Discharges - Radon	As required by 40 CFR 61.192, no more than 20 pCi/m^2-sec of radon-222 shall be emitted into the air from the facility, as an average for the entire source. 40 CFR 61 Subpart Q [Applicable] Radon-222 concentrations in the atmosphere above facility surfaces or openings shall not exceed 100 pCi/l at any given point. Radon-222 concentrations in the atmosphere shall not exceed an annual average of 30 pCi/l over the facility or 3 pCi/l at locations outside the facility. Radon-222 flux rates shall not exceed 20 pCi/m^2-sec. DOE Order 5400.5 Chapter IV [To Be Considered]	DOE and US EPA have entered into a Federal Facilities Agreement (FFA) for the control and abatement of radon-222 emissions as required by the Amended CERCLA Consent Agreement, Executive Order 12088, and 40 CFR 61 Subpart Q. The FFA (dated 11/26/91) requires that the DOE provide the US EPA with radon flux estimates from potential radon sources.

APPENDIX D

REMP AIR MONITORING PROCEDURE
EM-RM-001

Westinghouse Materials Company of Ohio	ENVIRONMENTAL MONITORING SECTION PROCEDURES	PAGE 1 OF 23 REV NO. 2
TITLE: REMP AIR MONITORING	PROC. NO. EM-RM-001	DATE: Oct. 31, 1991

DOCUMENT APPROVAL

PROCEDURE SECTION: Radiological Environmental Monitoring

PROCEDURE TITLE: REMP Air Monitoring

PROCEDURE NO: EM-RM-001

PREPARED BY: Patricia Kraps (AUTHOR) 09/17/91 (DATE)

APPROVED BY: [signature] (PROGRAM MANAGER) 10-18-91 (DATE)

AUTHORIZED BY: [signature] (MANAGER, ENVIRONMENTAL MONITORING) 10·18·91 (DATE)

TITLE: REMP AIR MONITORING | PROC. NO. EM-RM-001 | DATE: Oct. 31, 1991

1.0 PURPOSE

To assign responsibilities and establish the procedure for the collection of air samples in support of the Environmental Monitoring Program.

2.0 SCOPE

This procedure establishes guidelines for the method and frequency of the routine collection of environmental high volume air samples for analysis, data review and reporting, record keeping, and maintenance for General Metals and AMS-50 air monitoring pumps.

3.0 DEFINITIONS

Custody Transfer Record - A form used to track each person responsible for the physical custody of each sample from the time of collection to the time of analysis.

4.0 RESPONSIBILITIES

4.1 Manager, Environmental Monitoring shall be responsible for the administration of the Air Monitoring Station (AMS) sample collection program as identified in this procedure.

4.2 EM Engineer/Technologist (E/T) shall coordinate the efforts of EM Technicians, notify the laboratory of desired analyses, review analytical results, and maintain program records.

4.3 EM Technicians shall be responsible for the collection of samples from the AMS per this procedure.

5.0 GENERAL

5.1 Training

Only sampling technicians trained in the requirements of this procedure and procedure EM-AD-008 Chain-of-Custody and Request for Analysis shall perform sampling activities.

5.2 Health and Safety

No items or articles of clothing which have been used in the production area shall be used for sampling outside the production area.

5.3 Quality Assurance

All sample collection activities shall be conducted in such a way as to ensure that the required level of quality is achieved and maintained.

5.4 Suggested Equipment/Materials

- * A copy of EM-RM-001, REMP Air Monitoring
- * 0-150 CFM rotameter
- * Kurz Air Flow Calibration Unit
- • Pre-loaded and/or bagged glass microfibre filters from the Lab
- • Field Logbook
- • Air Monitoring Station keys
- * A previously tested and calibrated spare high volume air sampler pump
- * A spare timer and chart recorder
- • Replacement paper for circular chart recorders
- • Air Monitoring Station Data Sheet (Attachment A)
- • General Metals Air Monitoring Station Field Data Sheet (Attachment B, page 1 of 2)
- • AMS-50 Air Monitoring Station Field Data Sheet (Attachment B, page 2 of 2)
- * Custody Transfer Record (Attachment C)
- • General Metals Operating Log (Attachment D)
- • AMS-50 Operating Log (Attachment E)
- * Spare pens for chart recorders
- • Spare light bulbs
- * Fluke DMM
- * Extension cords
- * Sealing tape

5.5 Sampling Frequency

Samples of particulate matter in the air are continuously collected at permanent sampling stations located on site and at several locations in the surrounding community (Attachment F).

- • Each air monitoring station samples air at a rate of about 40-50 CFM (cubic feet per minute) through an 8 inch x 10 inch filter which is changed weekly.

6.0 PROCEDURE

6.1 Sample Collection Technique for General Metal Air Stations

Proceed to each of the air monitoring stations as shown on the maps (Attachment F) and perform filter exchange as described below.

6.1.1 Obtain the properly numbered AMS filter and other pertinent items.

6.1.2 Open the bottom compartment of the AMS housing.

* Attach rotameter rubber tubing to the fitting at the bottom of the pump.
* Read flowrate from the center of the silver metal ball (lower float) of the rotameter.
* Record the flowrate on the General Metal Air Monitoring Station Field Data Sheet in the column labeled "Air Flow (CFM) Ending."
* Record the date of collection on the General Metal Air Monitoring Field Data Sheet.

6.1.3 Turn the pump off by depressing the "STOP" toggle switch next to the timer.

* Record time unit stopped on the General Metal Air Monitoring Station Field Data Sheet.
* Record the reading from the elapsed timer on the General Metal Air Monitoring Station Field Data Sheet in the column labeled "Hours of Operation".
* Record the AMS #, date, and time on the back of a new chart.
* Remove the old chart from the Dickson recorder.
* Record the date and time on the back of the old chart.
* Place the new chart in the Dickson recorder.
* Align the chart pen at the proper day and time.
* Close Dickson door tightly.

6.1.4 Open the top of the AMS housing.

NOTE: If changing air monitoring station filters in the rain, avoid getting the filters wet. Keep the filter cover on the new filter as long as possible and exchange the filters under cover of the pump housing top.

* Unscrew the four wing nuts at the corners of the filter until loosened.

- Snap the filter cover off of the new filter.
- Place the filter cover on the old filter.
- Remove the old filter.
- Place the old filter in a clean plastic bag.
- Place new filter in housing.
- Tighten the four wing nuts at the corners of the filter until tightened.
- Close the top cover of the AMS housing.

6.1.5 Restart the pump by depressing the toggle switch for a couple of seconds until the pump starts and continues to run.

- Allow the pump to run for at least 1 minute prior to obtaining flowrate.
- Read the flowrate from the center of the silver metal ball (lower float) of the rotameter.
- Record the flowrate on the General Metal Air Monitoring Station Field Data Sheet in the column labeled, "Airflow (CFM) Start".
- Contact Health and Safety Instrumentation Lab (HSIL) for directions if the pump is not operating at 40-50 CFM.
- Make sure Dickson recorder is operating at the correct day and time.
- Ensure ink is flowing properly.

6.1.6 Close the lower door to the AMS housing, ensure the top cover and lower door are securely fastened and AMS fence locked.

6.1.7 Seal the bag closure containing the old filter.

6.1.8 Proceed to the next AMS station.

6.1.9 Repeat steps 6.1.1 through 6.1.8 until all filters have been exchanged.

6.1.10 Complete the Custody Transfer Record.

6.1.11 Submit the samples along with the Custody Transfer Record to the lab.

6.1.12 Transfer data from the General Metal Air Monitoring Station Field Data Sheet to the General Metal AMS Operating log.

* Transfer the "Air Flow (CFM) Ending" reading to the General Metal AMS Operating log in the column labeled "Ending Flowrate Rotameter."

* Transfer the actual flowrate in CFM from the corresponding calibration sheet for each air sampler pump to the General Metal AMS Operating log in the column labeled "End Flowrate (CFM)."

* Record the number of hours the AMS operated.

* Transfer the "Hours of Operation" reading to the General Metal AMS Operating log in the column labeled "Timer Counter Reading."

* Subtract the previous timer reading from the current to obtain the number of hours the AMS operated for the sampling period.

* Record the operating hours in the General Metal AMS Operating log column labeled "Time Hours."

* Transfer the "Air Flow (CFM) Start" reading to the General Metal AMS Operating log column "Starting Flowrate Rotameter."

* Transfer the actual flowrate in CFM from the corresponding calibration sheet to the General Metal AMS Operating log in the column labeled "Start Flowrate (CFM)."

* Record the date and time of collection in the General Metal AMS Operating log.

* Initial the entry for collection.

6.2 Sample Collection Technique for AMS-50 Air Stations

Proceed to each of the air monitoring stations as shown on the maps (Attachment F) and perform filter exchange as described below.

6.2.1 Obtain the properly numbered AMS filter, spare chart paper and spare pens for chart recorders.

6.2.2 Prior to opening the door of the housing, observe the two lights on the door of the unit.

- The green light indicates power to the unit; light should be lit.
- The yellow light indicates low flow; light will automatically come on if the flow rate drops below 35 CFM or greater than 50 CFM.

6.2.3 Use the special key provided to open unit door.

- Observe the inside of the unit and note any abnormalities (i.e., small blower motor not operating, Sierra flow indicator not working, loose wires and connectors).

6.2.4 Record the Sierra flowrate on the AMS-50 Air Monitoring Field Data Sheet in the column labeled "Air Flow (CFM) Ending."

- Record the date of collection on the Field Data Sheet.

6.2.5 Turn the pump off.

- Record the time the unit was stopped on the AMS-50 Air Monitoring Station Field Data Sheet.
- Record the reading from the top elapsed timer on the AMS-50 Air Monitoring Station Field Data Sheet in the column labeled "Minutes of Operation."
- Record time to nearest whole minute.
- Reset top elapsed timer by depressing and releasing the red reset button (bottom timer cannot be reset).
- Record the AMS #, date and time on the back of a new chart.
- Remove the old chart from the recorder by loosening the swing arm and moving to the side.
- Lift the pen arm and pull the old chart off the hub.
- Record date and time removed on the back of the old chart paper.
- Place the new chart in the recorder.
- Align the paper to the correct day and time by lining up with the start mark on the chart controller box.

* Place the swing arm back in place and tighten.

• Close the chart recorder door and latch.

6.2.6 Lift the top of the AMS housing

Note: If changing air monitoring station filters in the rain, avoid getting the filters wet. Keep the filter cover on the new filter as long as possible and exchange the filters under cover of the pump housing top.

* Loosen the four screws on the filter holder and remove from the filter.

* If cassettes are not used with the filters, the filter should be handled by the edges, being careful not to touch the collection surface area.

* Remove the filter and fold in half so the dirty portions are on the inside facing each other.

* Place the folded filter in an envelope, bag, filter holder or other suitable holder.

* The filter holder shall be marked with the filter location.

• When collecting the filter, look for and record any signs of damage to the filters (holes, tears, changes in filter appearance color or texture).

• Check for signs of deteriorating gaskets, indicated by a blurring of the margins on the filter.

• Check Sierra flow by selecting toggle switch "Readout Select" to "Set"

* If flow is outside the ± 3 CFM of the 45 CFM set, then contact the REM instrument technician for direction.

* Place "Readout Select" switch to "Read" position.

6.2.7 Place new filter in the unit.

* Before replacing the filter, wipe any dirt particles from the support screen and faceplate.

* Carefully handle the new filter by the edges and hold it up to the light to check for damage.

- Place the new filter on the support screen, ensure the correct side is turned up (rough side up if using glass fiber filters or the serial number side up if using numbered filters)
- Carefully align the filter so it will be centered on the support screen.
- Place the filter holder over the filter and tighten.
- Avoid excessive tightening of the holder to prevent possible damage to the gasket.
- Close the top cover of the AMS housing.
- Ensure the low flow light is on prior to restarting the pump.

6.2.8 Restart the pump.

- Allow the pump to reach operating speed (about one minute) before recording flowrate.
- Record the Sierra flowrate on the AMS-50 Air Monitoring Station Field Data Sheet in the column labeled "Airflow (CFM) Start."
- Ensure chart recorder is operating at the correct day and time.
- Ensure ink is flowing properly.
- If pump is not operating at 40-50 CFM, contact REM instrument technician for direction.
- Ensure low flow light is deenergized.

6.2.9 If unit is out of operation, and/or any abnormalities are noted, contact the REM instrument technician for direction.

6.2.10 Close door to the AMS-50 unit and secure in place by using specialized key.

6.2.11 Lock the AMS fence upon leaving.

6.2.12 Seal the filter holder containing the old filter.

6.2.13 Proceed to the next AMS location.

6.2.14 Repeat steps 6.2.1 through 6.2.13 until all AMS-50 air filters have been exchanged.

6.2.15 Complete the Custody Transfer Record.

6.2.16 Submit the samples along with the Custody Transfer Record to the Bioassay Lab.

6.2.17 Transfer data from the AMS-50 Air Monitoring Station Field Data Sheet to the AMS-50 Operating log.

* Transfer the "Air Flow (CFM) Ending" reading to the AMS-50 Operating log column "Ending Flowrate Sierra."

* Record the number of minutes the AMS-50 operated from the AMS-50 Air Monitoring Station Field Data Sheet to the AMS-50 Operating log column "Time Counter Reading Minutes."

* Calculate the number of hours of operations by dividing the counter reading in minutes by 60.

* Record the hours in the AMS-50 Operating log column "Time Hours."

* Transfer the "Air Flow CFM Start" reading to the AMS-50 Operating log column "Starting Flowrate Sierra."

* Record the date and time of collection in the AMS-50 Operating log.

* Initial the entry for collection.

6.3 Fill out the Air Monitoring Station Data Sheet (AMSDS).

* Record the date of collection.

* Record the name of the sampling technician.

* Check the appropriate box for routine collection or special collection.

* Check the boxes for total U, total particulates (TSP), and gross beta.

* If there are special instructions for analysis, check the box marked other and write in the parameter to be analyzed.

* Record any comments or irregularities in the operation of the AMS.

* Transfer the hours of operation from the General Metals and AMS-50 Operating logbooks column labeled "Time Hours."

* Record the start and ending flow rates. Obtain the flow rate data for each station from the AMS Operating logbooks.

* Repeat the appropriate steps above for each AMS to complete the Air Monitoring Station Data Sheet.

* Submit the AMSDS along with the Chart Recorders to the Bioassay Lab.

6.4 AMS Parts Maintenance for General Metal Air Stations

****

CAUTION

If electric plug is not disconnected from main outlet on the fence, the potential for electric shock exists.

****

6.4.1 Disconnect electric plug from main outlet on the fence.

6.4.2 Remove a pump, timer, or Dickson recorder if the part is not running properly or not operating.

* Replace the defective part with a spare part.

* Take the defective part to the HSIL for repair.

* Report the problem to one of the HSIL technician on duty and note in the Field Logbook the name of the individual notified and the time and date of notification.

6.4.3 After a pump has been repaired and before the pump is put back into service:

* Run the pump for a minimum of five minutes to seat the brushes prior to calibration.

* Calibrate the pump using a Kurz Air Flow calibration unit and a 0-150 CFM rotameter.

* Record this information into the Field Logbook and on the calibration sheet for that pump.

6.5 AMS Parts Maintenance for AMS-50 High Volume Air Stations

6.5.1 AMS-50 units shall be calibrated once every twelve months.

6.5.2 Due to the unit construction, parts should not be removed and interchanged between units without the direction of REM instrument technician.

6.6 Data Review and Reporting

6.6.1 The results of the AMS sampling program will be evaluated by the E/T. Any unusual results will be investigated.

6.6.2 An annual notification of results letter should be sent to responsible parties at offsite monitor locations.

6.6.3 The results shall be incorporated into the site Annual Environmental Report.

6.7 Record Keeping

6.7.1 The E/T shall retain a copy of each Analytical Data Sheet and Custody Transfer Record in the EM files.

6.7.2 Field data sheets shall be maintained in the EM files.

6.7.3 The E/T shall retain the analytical results and the chart recorder in the EM files.

7.0 APPLICABLE DOCUMENTS

7.1 EM-AD-008, Chain-of-Custody and Request for Analysis

7.2 FMPC Site Health and Safety Plan

7.3 FMPC-718, Measuring and Test Equipment Calibration and Control

7.4 FMPC-2207, FMPC Restoration Quality Assurance Program Plan (RQAPP)

8.0 ATTACHMENTS

8.1 Attachment A, AIR MONITORING STATION DATA SHEET, FMPC-REST-2739

8.2 Attachment B, GENERAL METALS AIR MONITORING STATION FIELD DATA SHEET, page 1 of 2

8.3 Attachment B, AMS-50 AIR MONITORING STATION FIELD DATA SHEET, page 2 of 2

8.4 Attachment C, CUSTODY TRANSFER RECORD, FMPC-OS&H-2775

8.5 Attachment D, GENERAL METALS OPERATING LOG

8.6 Attachment E, AMS-50 OPERATING LOG

8.7 Attachment F, MAPS OF AIR MONITORING STATIONS

ATTACHMENT A
PAGE 1 OF 1

AIR MONITORING STATION DATA SHEET

FMPC

RESTORATION - ENVIRONMENTAL MONITORING

AIR MONITORING STATION DATA SHEET

COLLECTION DATE: _____ NAME: _____

SAMPLE TYPE:
- ☐ ROUTINE
- ☐ SPECIAL

ANALYSIS REQ:
- ☐ TOTAL U
- ☐ TOTAL PARTICULATE (TSP)
- ☐ GROSS BETA
- ☐ OTHER

STATION NUMBER	COMMENTS	HOURS OF OPERATION	AIR FLOW (CFM) START	AIR FLOW (CFM) ENDING	TOTAL U (ug)	GROSS BETA (d/m)	TSP	OTHER
AMS1								
AMS2								
AMS3								
AMS4								
AMS5								
AMS6								
AMS7								
AMS8								
AMS9								
A & W								
Crossley								
Hodgson								
Bible								
Road or Bible								
U.C.								
Meteorological								
Blank Filter								

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FEMP-AMS-FRM (REV. 4/88)

ATTACHMENT B
PAGE 1 OF 2

AIR MONITORING STATION FIELD DATA SHEET
for GENERAL METAL MONITORS

FEMP

ENVIRONMENTAL MONITORING

AIR MONITORING STATION FIELD DATA SHEETS

FOR GENERAL METAL PUMPS

COLLECTION DATE | NAME OF ERMT

STATION NUMBER	COMMENTS	HOURS OF OPERATION	AIR FLOW (CFM) START	AIR FLOW (CFM) END	TIME
AMS 1					
AMS 2					
AMS 3					
AMS 4					
AMS 5					
AMS 6					
AMS 7					
AMS 8					
AMS 9					
A & W					
CROSBY					
MORGAN					
ELDA					
ROOF OF ELDA					
U.C.					
MIAMITOWN					

ATTACHMENT B
PAGE 2 OF 2

AIR MONITORING STATION FIELD DATA SHEET
for AMS-50 MONITORS

FEMP

ENVIRONMENTAL MONITORING

AIR MONITORING STATION FIELD DATA SHEETS

FOR AMS-50 PUMPS

COLLECTION DATE		NAME OF ERMT			
STATION NUMBER	COMMENTS	MINUTES OF OPERATION	AIR FLOW (CFM) START	AIR FLOW (CFM) END	TIME
AMS 1					
AMS 2					
AMS 3					
AMS 4					
AMS 5					
AMS 6					
AMS 7					
AMS 8					
AMS 9					
A & W					
CROSBY					
MORGAN					
ELDA					
ROOF OF ELDA					
U.C.					
MIAMITOWN					

Westinghouse Materials Company of Ohio	ENVIRONMENTAL MONITORING SECTION PROCEDURES	PAGE 17 OF 23 REV NO. 2
TITLE: REMP AIR MONITORING	PROC. NO. EM-RM-001	DATE: Oct. 31, 1991

ATTACHMENT C
PAGE 1 OF 1

CUSTODY TRANSFER RECORD

FMPC

CUSTODY TRANSFER RECORD

ITEM NUMBER	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER	PRESERVATIVE	COMMENTS

MATRIX: A - AIR M - MILK SD - SEDIMENT CONTAINER: G - GLASS
F - FERTILIZER P - PRODUCE W - WATER P - PLASTIC
G - GRASS S - SOIL O - OTHER (Specify)

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME

ATTACHMENT D
PAGE 1 OF 1

GENERAL METALS OPERATING LOG

GENERAL METALS-OPERATING LOG

BOUNDARY STATION

INIT.	DATE & TIME	TIME HOURS	TIME COUNTER READING	END FLOWRATE (CFM)	ENDING FLOWRATE ROTOMETER	START FLOWRATE (CFM)	STARTING FLOWRATE ROTOMETER

Westinghouse Materials Company of Ohio	ENVIRONMENTAL MONITORING SECTION PROCEDURES	PAGE 19 OF 28
		REV NO. 2
TITLE: REMP AIR MONITORING	PROC. NO. EM-RM-001	DATE: Oct. 31, 1991

ATTACHMENT E
PAGE 1 OF 1

AMS-50 OPERATING LOG

BOUNDARY STATION

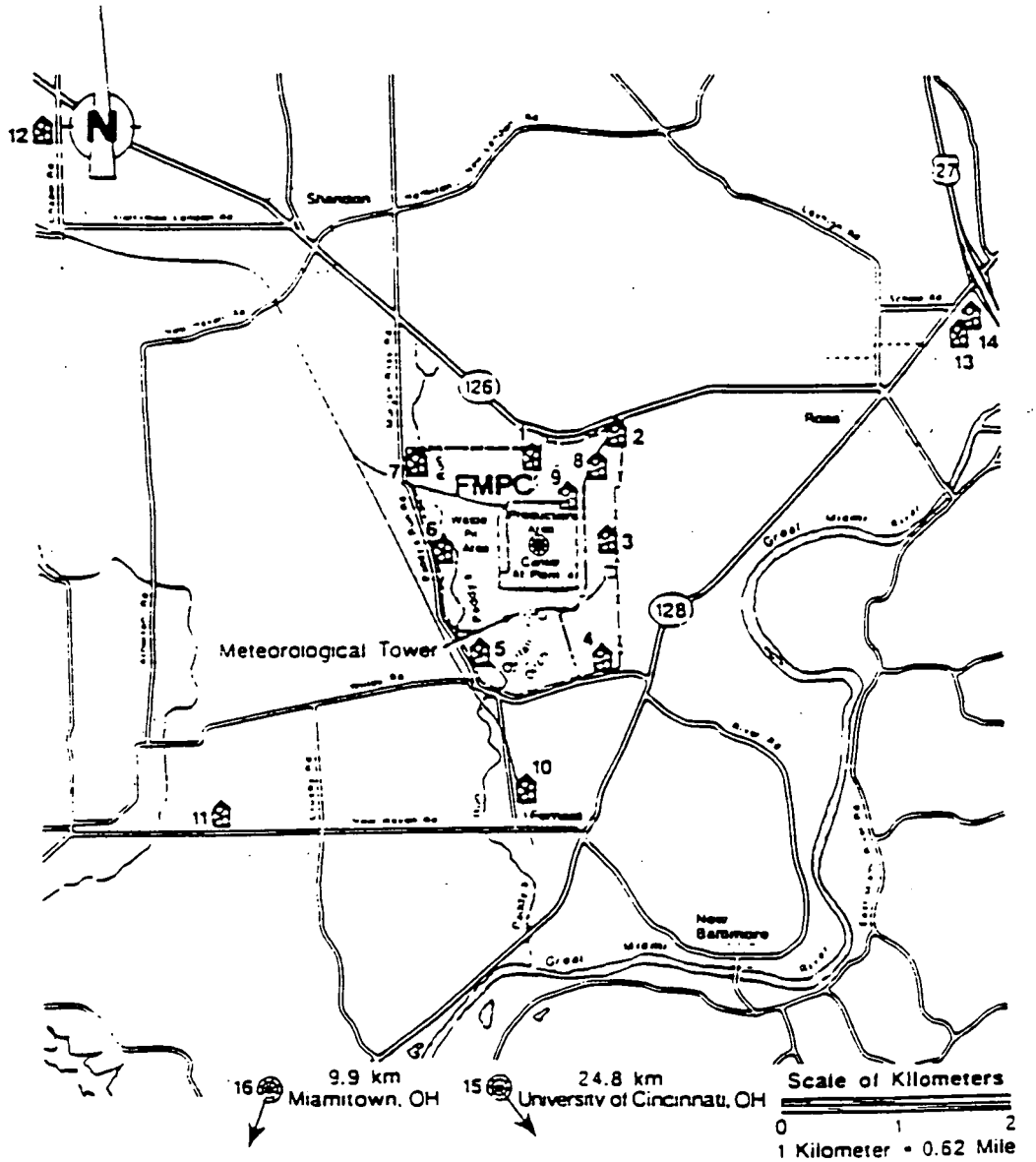
AMS-50 OPERATING LOG

DATE & TIME	TIME HOURS	TIME COUNTER READING	ENDING FLOWRATE SIERRA (CFM)	STARTING FLOWRATE SIERRA (CFM)	INITIALS

Westinghouse Materials Company of Ohio	ENVIRONMENTAL MONITORING SECTION PROCEDURES	PAGE 20 OF 28
		REV NO. 2
TITLE: REMP AIR MONITORING	PROC. NO. EM-RM-001	DATE: Oct. 31, 1991

ATTACHMENT F
PAGE 1 OF 9

MAP OF AIR MONITORING STATIONS



LEGEND

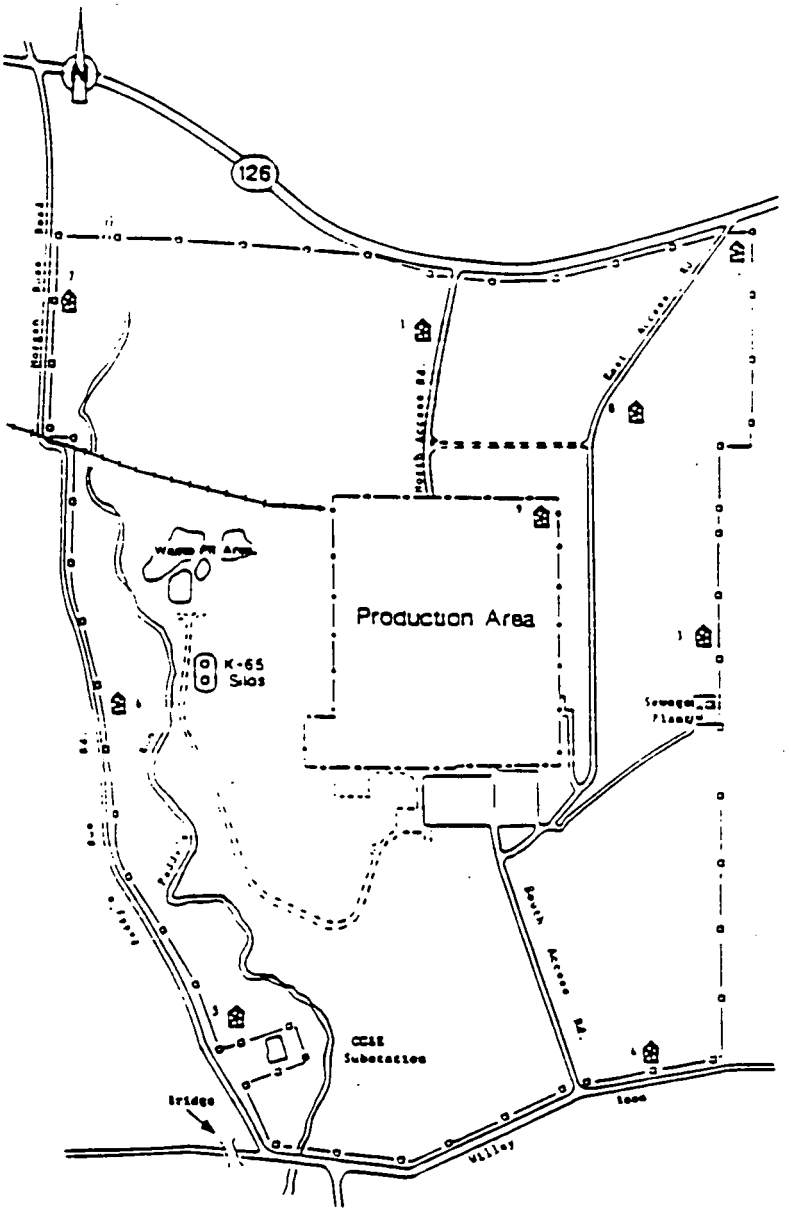
- Air Monitoring Location
- Distance from Center of Production Area to Sampling Locations off Map
- Plant Perimeter
- Production Area Perimeter

LIST OF AIR MONITORING STATIONS

AMS 1	On the old north Access Road.
AMS 2	Southwest of the east Access Road and state Route 126 intersection.
AMS 3	East of FMPC and 340 yards north of Sewage Treatment.
AMS 4	150 yards east of the south Access Road and Willey Road intersection.
AMS 5	On Paddy's Run Road at the CG&E substation.
AMS 6	On Paddy's Run Road due west of the K-65 Silos 1 & 2.
AMS 7	On Morgan-Ross Road northwest corner of FMPC site.
AMS 8	On the east Access Road northeast of the FMPC site.
AMS 9	Northeast corner of the process area northeast of production area.
AMS 10	Between Ruetgers - Nease Inc. and Albright and Wilson on Paddy's Run Road.
AMS 11	Crosoy School on New Haven Road.
AMS 12	Southwest corner of Morgan School located on Chapel Road north of Shandon, Ohio.
AMS 13	Elda School in Ross, Ohio on State Route 128.
AMS 14	Roof of Elda School in Ross, Ohio on State Route 128.
AMS 15	University of Cincinnati campus on Martin Luther King Drive at the S.W.O.A.P.C.A. air monitoring station.
AMS 16	S.W.O.A.P.C.A. air monitoring station south of Harrison Avenue on Ripple Road next to Hamilton County Highway Maintenance facility.

ATTACHMENT F
PAGE 3 OF 9

AIR MONITORING STATION 1-9



LEGEND

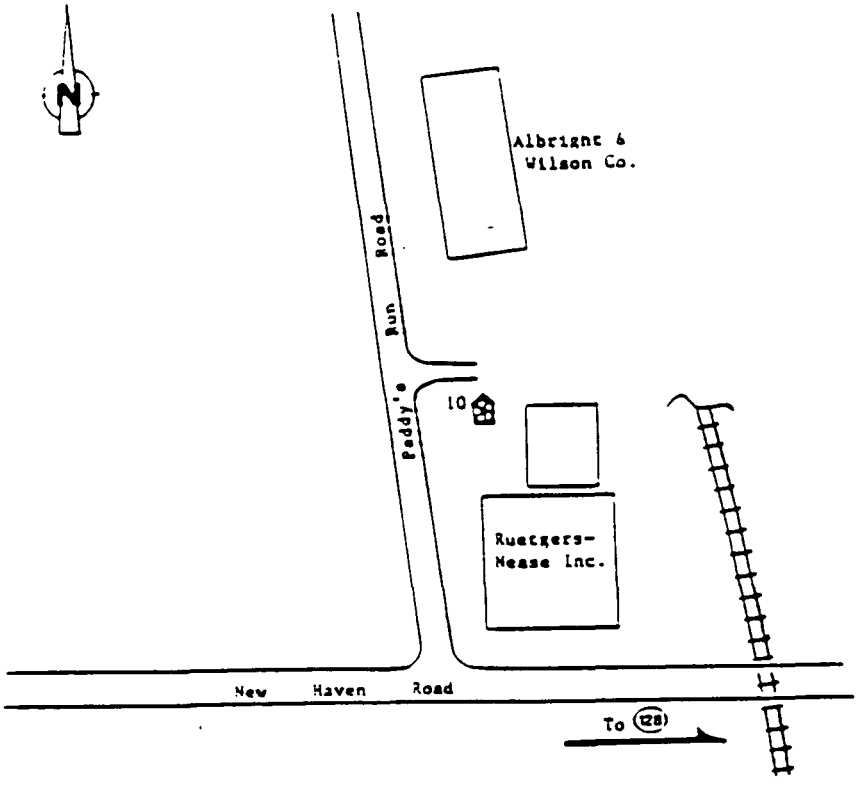
Air Monitoring Location

Plant Perimeter

Production Area Perimeter

ATTACHMENT F
PAGE 4 OF 9

AIR MONITORING STATION 10



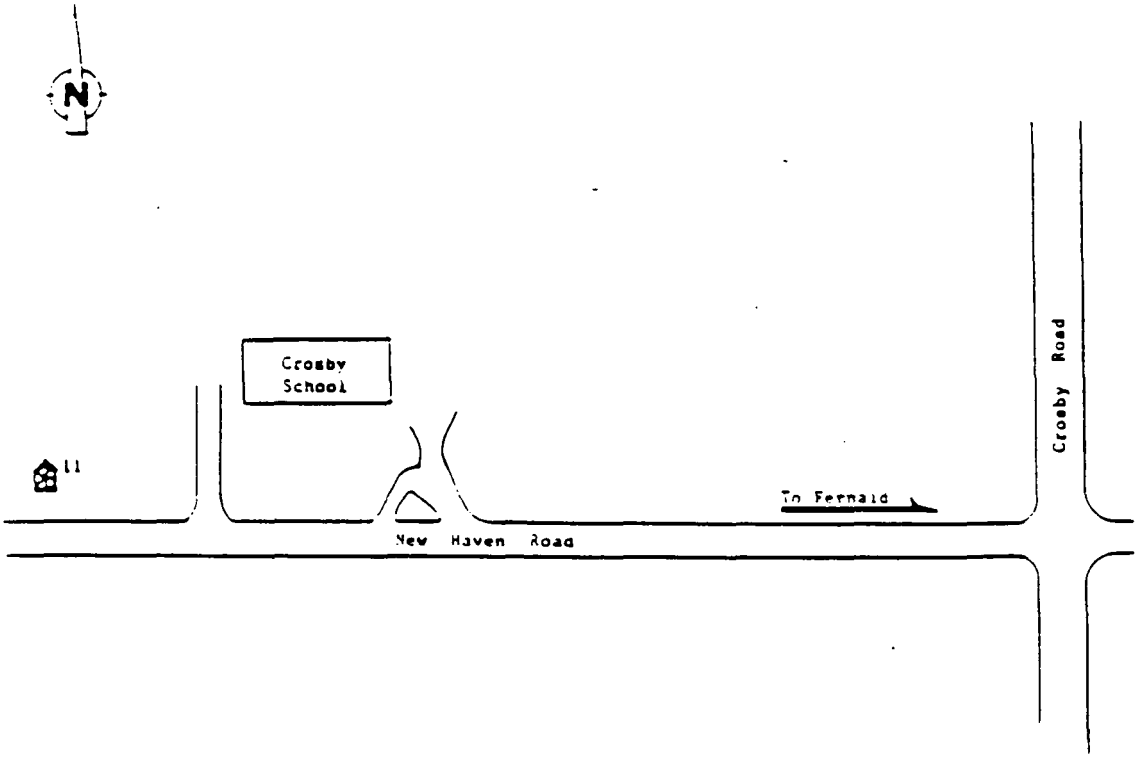
LEGEND

Air Monitoring Location

Westinghouse Materials Company of Ohio	ENVIRONMENTAL MONITORING SECTION PROCEDURES	PAGE 24 OF 28 REV NO. 2
TITLE: REMP AIR MONITORING	PROC. NO. EM-RM-001	DATE: Oct. 31, 1991

ATTACHMENT F
PAGE 5 OF 9

AIR MONITORING STATION 11



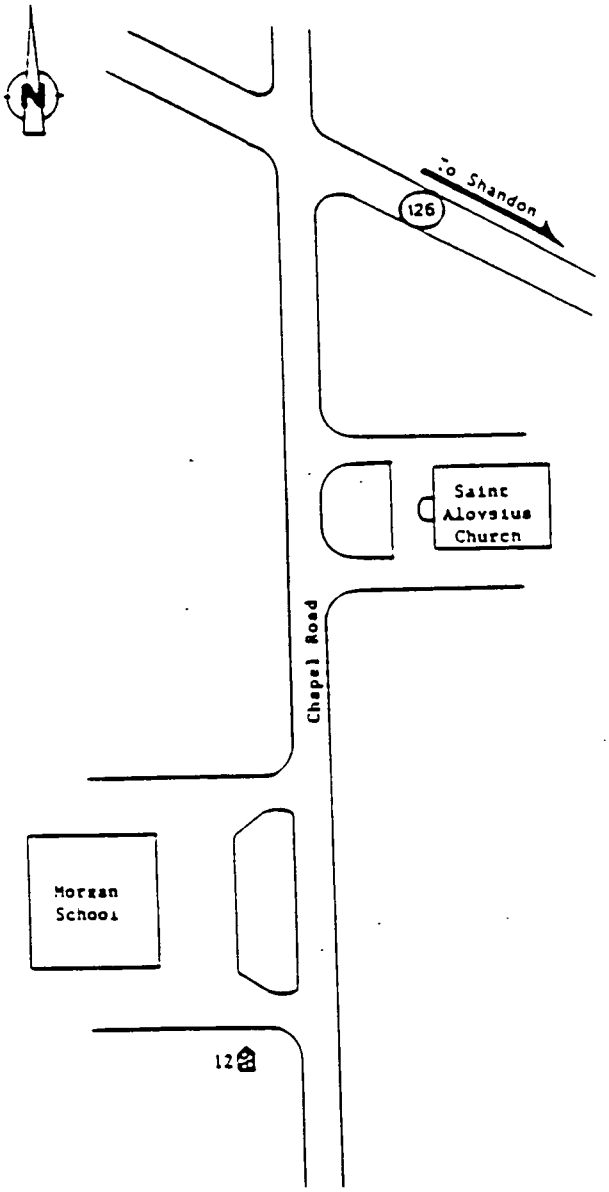
LEGEND

Air Monitoring Location

Westinghouse Materials Company of Ohio	ENVIRONMENTAL MONITORING SECTION PROCEDURES	PAGE 25 OF 28 REV NO. 2
TITLE: REMP AIR MONITORING	PROC. NO. EM-RM-001	DATE: Oct. 31, 1991

ATTACHMENT F
PAGE 6 OF 9

AIR MONITORING STATION 12

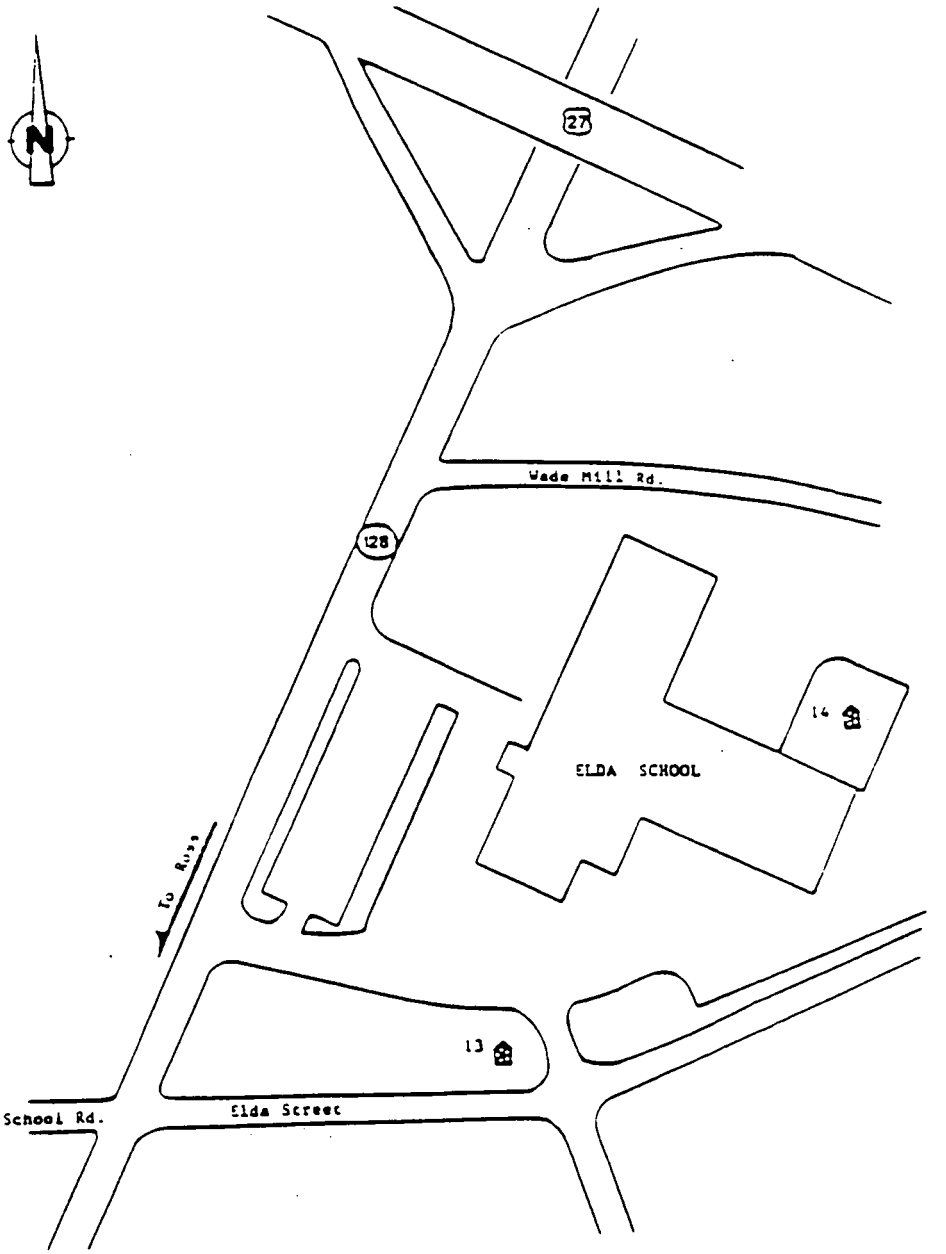


LEGEND

Air Monitoring Location

Westinghouse Materials Company of Ohio	ENVIRONMENTAL MONITORING SECTION PROCEDURES	PAGE 26 OF 28 REV NO. 2
TITLE: REMP AIR MONITORING	PROC. NO. EM-RM-001	DATE: Oct. 31, 1991

AIR MONITORING STATION 13-14



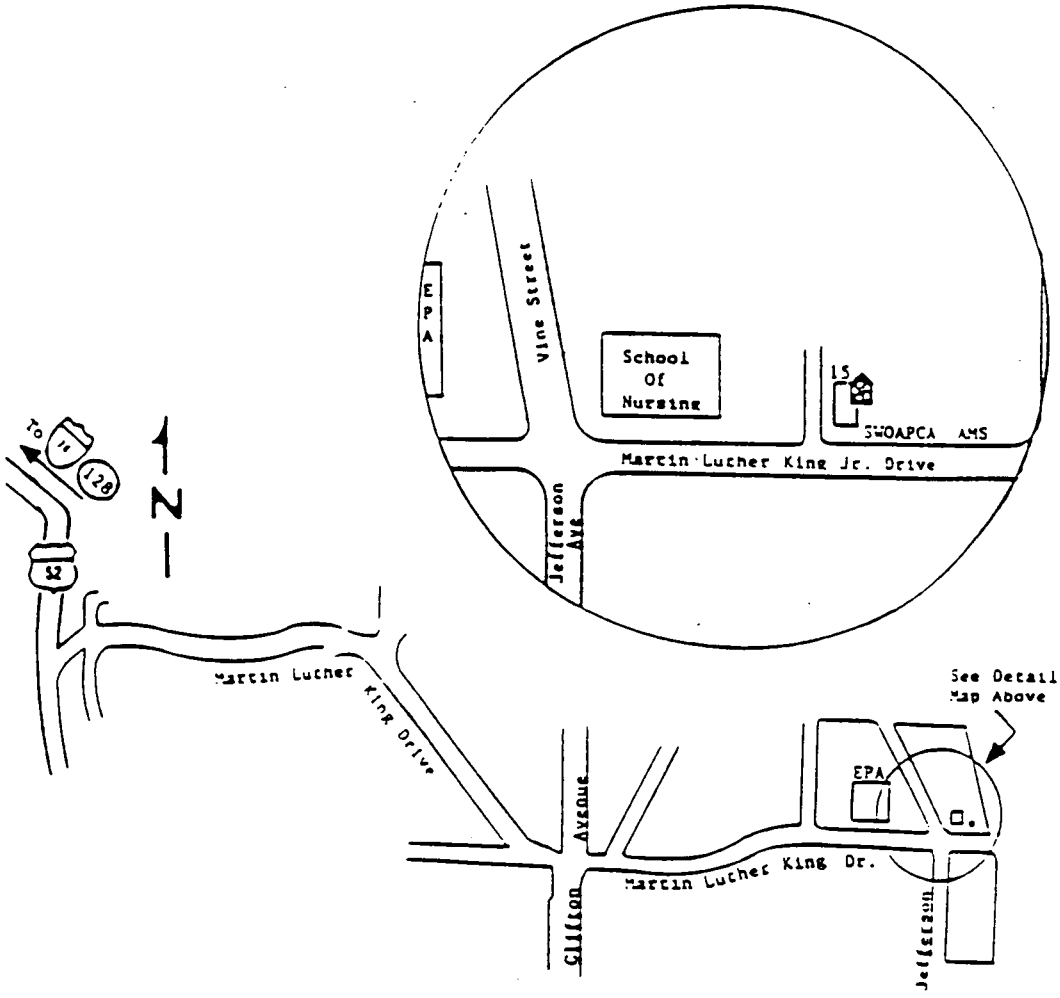
LEGEND

Air Monitoring Location

Westinghouse Materials Company of Ohio	ENVIRONMENTAL MONITORING SECTION PROCEDURES	PAGE 27 OF 28 REV NO. 2
TITLE: REMP AIR MONITORING	PROC. NO. EM-RM-001	DATE: Oct. 31, 1991

ATTACHMENT F
PAGE 8 OF 9

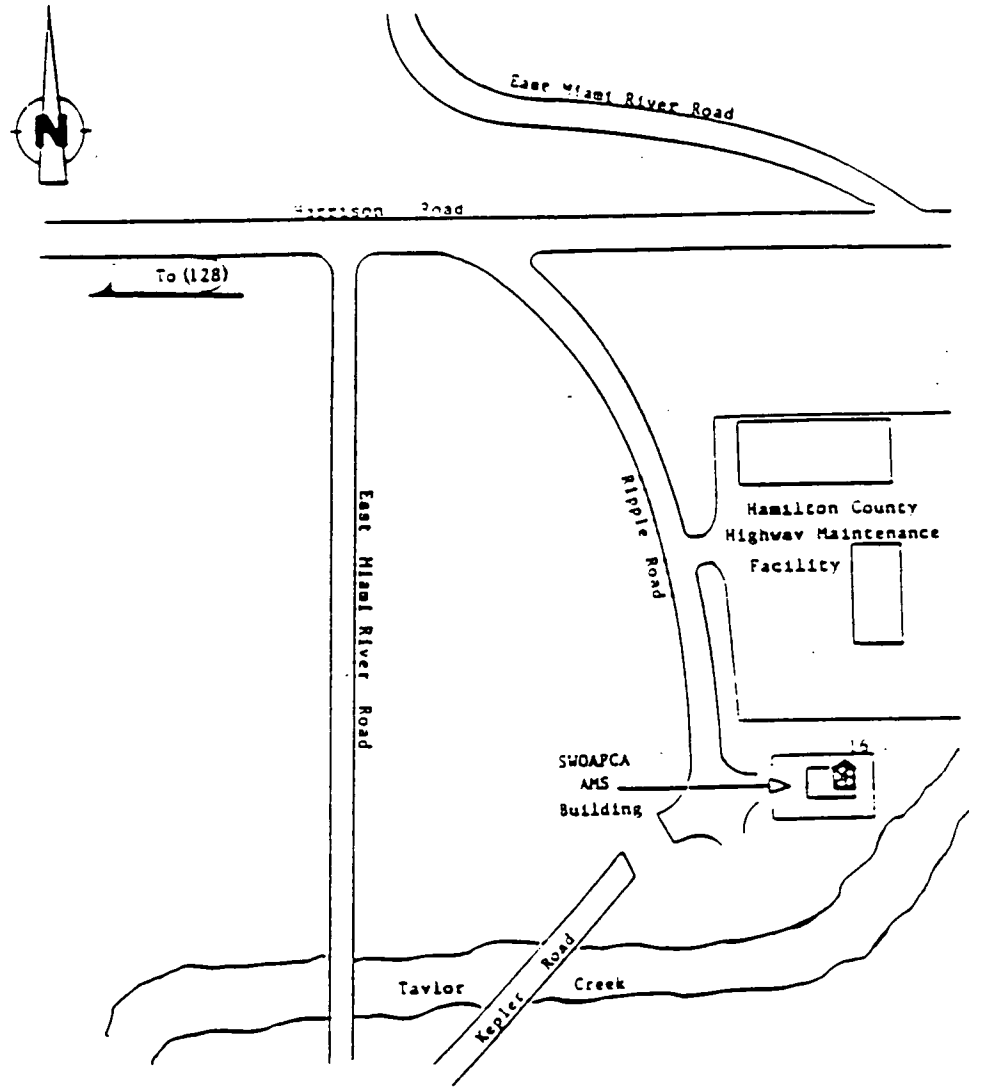
AIR MONITORING STATION 15



LEGEND

Air Monitoring Location

AIR MONITORING STATION 16



LEGEND

Air Monitoring Location

APPENDIX E

WEMCO GRAVIMETRIC DETERMINATION OF AIRBORNE PARTICULATES PROCEDURE

DRAFT

3688 JUN 1992

FMPC WESTINGHOUSE MATERIALS COMPANY OF OHIO OPERATIONS DOCUMENT PROGRAM	Page 1 of 13 Revision No. 0	
ANALYTICAL LABORATORY PROCEDURE	GRAVIMETRIC DETERMINATION OF AIRBORNE PARTICLES *[QUESTIONS CONTACT PTR W. H. HAYES X-6221]*	METHOD 8008 Draft 01-16-91 AREA: Sample & Data Management
Authorization: W. J. Neyer, Analytical Laboratory	Supersedes: None	Issue Date:

1.0 SCOPE

1.1 This procedure establishes a method to analyze air filter samples collected for the determination of airborne particulates.

1.2 The method is applicable for analysis of total particulates collected on 8 x 10 inch glass fiber filters at the environmental air monitoring stations.

2.0 PURPOSE/PRINCIPLE

2.1 The purpose of the procedure is to analyze the concentration of particulates in the local area air.

2.2 Glass fiber filters are preweighed on an analytical balance equipped with an air pollution weighing chamber. The filters are loaded into the filter holders. The loaded filter holders are then placed onto high volume sampling pumps located onsite, around the perimeter of the plant, and at seven offsite locations by the Environmental and Radiological Monitoring Technicians (E&RMT). Pumps operate approximately 168 hours (seven days) with the filters, which are then collected and brought to the Bioassay Laboratory. The filters are allowed to reach equilibration in an environmentally controlled room, and then are weighed. The weight change, which is also corrected for a blank filter kept in the environmentally controlled room, enables calculation of the total weight of the particulates on the filter. The number of hours that the filter was on the pump, along with the flow rate that the sampling was performed at, enables calculation of the concentration of particulates in the air.

3.0 SPECIAL APPARATUS AND MATERIALS

3.1 Whatman EPM-2000 Glass Fiber Filters, size 8 x 10 inches.

3.2 Mettler Model AE163 analytical balance equipped with an air pollution weighing chamber for 8 x 10 inch filters.

3.3 General Metals filter holders for 8 x 10 inch filters.

3.4 Environmentally controlled room, ranging from 40 to 50% relative humidity.

3.5 Area for laying out fifteen 8 x 10 inch filters.

4.0 REAGENTS

4.1 Because this method is based only on weight, no reagents are required.

5.0 SAFETY PRECAUTIONS

5.1 Safety glasses shall be worn in the laboratory at all times.

6.0 SAMPLE PREPARATION

6.1 Sample preservation.

6.1.1 Samples should be stored in the environmentally controlled room for at least 24 hours before weighing.

6.1.2 Samples may be stored in the environmentally controlled room for up to seven days before final weighing.

6.2 Interferences.

6.2.1 Foreign matter such as weeds and insects will introduce a positive error to the method.

6.2.2 Holes or tears in the filter will cause a negative error and should be noted on the worksheet and on the Air Monitoring Data Sheet.

6.2.3 The filters are examined carefully using a light box prior to initial weighing. Any filters with pinholes are not used for collection of air.

6.3 Sample Preparation.

PROCEDURE	COMMENTS
6.3 1 Check fifteen Whatman EPM-2000 glass fiber filters, size 8 x 10 inches, for holes by slowly passing the filter over a light source.	Fifteen filters are currently used. This may change if the number of samplers change.
6.3.2 Lay fifteen filters out on the filter table.	
6.3.3 Wait at least 24 hours to weigh filters.	This allows filters to reach equilibrium.

6.0 SAMPLE PREPARATION (cont.)

PROCEDURE	COMMENTS
6.3.4 Upon receipt of the soiled filters, remove filters from filter holders and place in the correct order on filter cubicles.	
6.3.5 Remove the blank from the corresponding folder and place on the filter cubicle.	

7.0 PROCEDURE

PROCEDURE	COMMENTS
7.1 Follow sample preparation steps 6.3.1 through 6.3.3.	
7.2 Calibrate the analytical balance by following steps 11.8.1 through 11.8.5 in the CALIBRATION section.	
7.3 Record the temperature, humidity, date and analyst's initials in the logbook.	
7.4 Put on disposable polyvinyl gloves.	This prevents alteration of results that may be caused by moisture and oil on fingers.
7.5 Place one unweighed filter in the folder or box marked "Offsite Blank". Include a slip of paper with the corresponding collection date noted.	This filter is used as a blank for filters which are sent for offsite uranium analysis.

7.0 PROCEDURE (cont.)

PROCEDURE	COMMENTS
7.6 Place a filter in the air pollution weighing chamber. The front edge of the filter should be placed on the two white marks on the assembly. The filter should be centered on each side. Gently close the door of the assembly.	
7.7 The weight is ready to be recorded when the green pilot light, located to the left of the digital display, has gone out.	
7.8 Record this reading under the column "Blank B" on the Air Monitoring Station particulate Worksheet.	"B" denotes "before".
7.9 Carefully remove filter from weighing chamber and place in a folder specified "Blank". Place a slip of paper with the collection date noted in the folder with the blank filter.	
7.10 Follow steps 7.6 and 7.7 for the next filter.	
7.11 Record the weight in the "TARE WT." row of the corresponding location on the Air Monitoring Station Particulate Worksheet. (See Figure 1.)	

7.0 PROCEDURE (cont.)

PROCEDURE	COMMENTS
7.12 Remove the filter from the weighing chamber and place in the appropriate filter holder. Carefully center the filters. Place the thumb nuts on the bolts, and partially tighten each one. Then finish tightening them both at the same time.	Assure that the filter is centered. Sampler will not collect properly if the filter slips off the edges of the filter holder.
7.13 Place filter holder in a 16 x 22 inch, or similarly sized, plastic bag. Place bagged filter holders in numerical order in the cardboard box used by the E&RM Technicians to distribute the filters.	The plastic bag prevents contamination of the filters.
7.14 Follow steps 7.9 through 7.13 for each of the remaining filters.	
7.15 The air monitoring station filters are routinely changed by the E&RM technicians on Tuesday mornings.	
7.16 Upon receipt of the soiled filters, remove the filters from the holders and place in the proper order on the cubicle in the environmentally controlled room. Leave the filters out at least 24 hours before weighing.	
7.17 Remove from the file folders the "Blank" and "Offsite Blank" filters.	

ANALYTICAL LABORATORY PROCEDURE	GRAVIMETRIC DETERMINATION OF AIRBORNE PARTICLES [QUESTIONS CONTACT PTR W. H. HAYES X-6221]	METHOD 8008 Draft 01-16-91 AREA: Sample & Data Management
Authorization: W. J. Neyer, Analytical Laboratory	Supersedes: None	Issue Date:

7.0 PROCEDURE (cont.)

PROCEDURE	COMMENTS
7.18 Follow steps 11.8.1 through 11.8.5 in the CALIBRATION section for calibration of the electronic analytical balance.	
7.19 Record temperature and humidity in the logbook.	
7.20 Place the filter which served as the blank into the air pollution weighing chamber. When the green pilot light goes out, record the results on the Air Monitoring Station Particulate Worksheet under column "BLANK" row "A".	"A" denotes "After".
7.21 Remove the filter from the air pollution weighing chamber and carefully fold in half. Place in the file folder labeled "Blank".	
7.22 Place the next filter into the air pollution weighing chamber. When the green pilot light goes out, record the result on the Air Monitoring Station Particulate Worksheet" under the proper location in the row labeled "GROSS WT.".	

7.0 PROCEDURE (cont.)

PROCEDURE	COMMENTS
7.23 Remove the filter from the air pollution weighing chamber and carefully fold in half with the soiled portion inside. The folded filter should be 5 x 8 inches. Place in the appropriate file folder for onsite analysis or ziploc bag for offsite analysis.	See Figure 2 for a list of current air monitoring stations. Figure 2 also denotes which filters are sent for offsite analysis.
7.24 Follow Steps 7.22 and 7.23 for the remaining filters.	The filters are saved for further analyses by Method 8004 "Determination of Uranium and Gross Beta Particle Activity in High Volume Air Dust Samples".

8.0 STANDARDIZATION

8.1 Inherent in the procedure.

9.0 CALCULATION

9.1 The weight change constant (WCC) is calculated from the before and after weights of the blank filter.

BEFORE - AFTER = WCC

The WCC may be positive or negative.

9.2 For each filter, the tare weight is subtracted from the gross weight of the filter and recorded in the "NET WT." row on the Air Monitoring Station Particulate Worksheet. The WCC calculated in 9.1 is then added to the net result and recorded in the "PARTICULATES" row of the worksheet.

GROSS WT. - TARE WT. = NET WT.

NET + WCC = PARTICULATES

9.3 The value obtained and recorded in the "PARTICULATES" row is then reported on the "AIR MONITORING STATION DATA SHEET" (FMPC-ES&H-2739, Figure 3) under the column heading "TSP". The result is reported in grams.

R - MATERIAL REVISED, ADDED, OR DELETED.

10.0 PRECISION AND ACCURACY

10.1 Inherent in Quality Assurance and Calibration.

11.0 QUALITY ASSURANCE

11.1 The temperature and humidity of the environmentally controlled room are measured each time the filters are weighed.

11.2 The analytical balance is calibrated using the internal calibration weight prior to each use. The analytical balance serviceman calibrates and services the balance every six months.

11.3 The filter holder assemblies are washed in warm soapy water and air dried prior to use to minimize contamination.

11.4 A blank filter, kept in the environmentally controlled room, is weighed at both the initial and final weighings. The difference in weights is used to correct the weights of the samples, accounting for any small fluctuations in conditions.

11.5 The filters are inspected for pinholes prior to use.

11.6 The soiled filters are visually inspected and notations made of any tears or unusual debris.

11.7 The filters are laid out in the environmentally controlled room for at least 24 hours prior to each weighing.

11.8 Calibration.

11.8.1 The electronic analytical balance is calibrated before each use.

11.8.2 Level the balance if necessary by manipulating the legs of the balance.

11.8.3 Remove the sample rack inside the air pollution weighing chamber by gently lifting up on the rack. Take care not to drop the small metal wires which hold the rack onto the balance.

11.0 QUALITY ASSURANCE (cont.)

11.8.4 Hold the control bar down until it is in the CAL mode. When the light flashes 100, slide the 100 gram weight into place. It should then display approximately 100.0000. Record the exact value in the logbook. Then the display will flash 0. Slide the 100 gram weight out of position. When it reads 0.0000, the calibration is finished. If the value obtained in the calibration is not 100.0000 + .0002, then repeat calibration. If the calibration is still out of range, contact the ES&H Instrumentation Laboratory to check the balance.

11.8.5 Replace the Rack in the air pollution weighing chamber and rezero by pushing down on the bar.

12.0 REFERENCES

NOTE: Listed references are for procedure preparation only and are not intended for use in performing procedure tasks.

12.1 "SOP - Determination of Uranium and Gross Beta Particle Activity in High Volume Air Dust Samples" - Procedure ESH-P-30-062.

13.0 FIGURES

13.1 Figure 1 - Air Monitoring Station Particulate Worksheet.

13.2 Figure 2 - List of Current Air Monitoring Stations.

13.3 Figure 3 - Air Monitoring Station Data Sheet (FMPC-ES&H-2739).

ANALYTICAL LABORATORY PROCEDURE	**GRAVIMETRIC DETERMINATION OF AIRBORNE PARTICLES** *[QUESTIONS CONTACT PTR W. H. HAYES X-6221]*	**METHOD 8008** Draft 01-16-91 AREA: Sample & Data Management
Authorization: W. J. Neyer, Analytical Laboratory	Supersedes: None	Issue Date:

AIR MONITORING STATION PARTICULATE WORKSHEET
Figure 1

R - MATERIAL REVISED, ADDED, OR DELETED.

AMS1

AMS2

AMS3

AMS4

AMS5

AMS6

AMS7

AMS8

AMS9

* AMS10 (Albright & Wilson)

* Elda School

* Crosby School

* Morgan School

* Denotes that these filters are sent offsite for uranium analysis.

LIST OF CURRENT AIR MONITORING STATIONS
SEPTEMBER 27, 1987
Figure 2

R - MATERIAL REVISED, ADDED, OR DELETED.

FMPC WESTINGHOUSE MATERIALS COMPANY OF OHIO OPERATIONS DOCUMENT PROGRAM	Page 12 of 13 Revision No. 0	
ANALYTICAL LABORATORY PROCEDURE	**GRAVIMETRIC DETERMINATION OF AIRBORNE PARTICLES** *[QUESTIONS CONTACT PTR W. H. HAYES X-6221]*	**METHOD 8008** Draft 01-16-91 AREA: Sample & Data Management
Authorization: W. J. Neyer, Analytical Laboratory	Supersedes: None	Issue Date:

AIR MONITORING STATION DATA SHEET
Figure 3

R - MATERIAL REVISED, ADDED, OR DELETED.

FMPC WESTINGHOUSE MATERIALS COMPANY OF OHIO OPERATIONS DOCUMENT PROGRAM	Page 13 of 13 Revision No. 0	
ANALYTICAL LABORATORY PROCEDURE	**GRAVIMETRIC DETERMINATION OF AIRBORNE PARTICLES** *[QUESTIONS CONTACT PTR W. H. HAYES X-6221]*	**METHOD 8008** Draft 01-16-91 AREA: Sample & Data Management
Authorization: W. J. Neyer, Analytical Laboratory	Supersedes: None	Issue Date:

RECORD OF ISSUE/REVISIONS

DATE	REV. NO.	DESCRIPTION AND AUTHORITY
Draft	0	Procedure requirement for the analysis of airborne particulates per Request No. P90-269 initiated by W. H. Hayes.

R - MATERIAL REVISED, ADDED, OR DELETED.

APPENDIX F

RADIOLOGICAL SAFETY
RADIOLOGICAL CONTAMINATION SURVEYS PROCEDURE
SP-P-35-023

Control Number 354

Westinghouse Environmental Management Company of Ohio

Revision: 2

Safety Procedures	Title: Radiological Contamination Surveys.	SP-P-35-023
		Department: IRS&T Section: RS

Authorization: [signature]

Supersedes: None
Revision Date: 1/22/92

1.0 PURPOSE

Assign responsibilities and establish the procedure for performing radiological contamination surveys.

2.0 SCOPE

This procedure defines the method to schedule, perform, and document contamination surveys.

3.0 DEFINITIONS

3.1 Contamination - Radioactive material that is not contained or is present where it is unwanted. Classified as:

3.1.1 Removable - Loose contamination that readily transfers to a smear with moderate pressure.

3.1.2 Fixed - Contamination that does not readily transfer to a smear.

3.2 Frequency - The time frame in which a scheduled survey shall be completed.

3.2.1 Daily - Shall be completed each calendar day, with the exception of weekends and holidays.

3.2.2 Weekly - Shall be completed between 0000 hours Monday and 2400 hours the following Sunday.

3.2.3 Monthly - Shall be completed during the calendar month.

3.0 DEFINITIONS (continued)

3.2.4 Quarterly - Shall be completed four times per year, once in each calendar quarter. The calendar quarters are:

1st - January 1 to March 31.
2nd - April 1 to June 30
3rd - July 1 to September 30
4th - October 1 to December 31

3.2.5 Semi-Annual - Shall be completed two times per year; once between January 1 and June 30, and the other between July 1 and December 31 each calendar year.

3.2.6 Annual - Shall be completed during the calendar year.

3.3 Minimum Detectable Activity (MDA) - The amount of activity which must be surpassed for a sample to be considered above background.

3.3.1 The MDA for Geiger-Mueller (G-M) pancake probes is considered to be:

3.3.1.1 1000 dpm/100 cm^2 (100 cpm above background) for direct survey techniques.

3.3.1.2 400 dpm/probe area (100 cpm above background) for smear techniques.

3.3.2 The MDA for alpha-scintillator type probes is considered to be:

3.3.2.1 200 dpm/100 cm^2 (20 cpm above background) for direct survey techniques.

3.3.2.2 200 dpm/probe area (20 cpm above background) for smear techniques.

3.4 Gross Area Smears - Large area smears taken as an indication of the presence or absence of contamination.

4.0 RESPONSIBILITIES

4.1 The Manager(s) of personnel required to perform work per this procedure shall ensure that affected personnel are informed and/or trained to the extent necessary prior to initiation of that work.

4.0 RESPONSIBILITIES (continued)

4.2 RS Supervisor(s) shall be responsible for scheduling and reviewing all surveys as prescribed by this procedure.

4.3 The RSTs shall be responsible for performing and documenting surveys in accordance with the requirements of this procedure.

5.0 GENERAL

5.1 The purposes of contamination surveys are:

5.1.1 Characterize the levels of contamination in an area.

5.1.2 Provide documentation of radiological conditions.

5.1.3 Detect trends and build-up of contamination in areas.

5.1.4 Provide a base for contamination control.

5.2 Frequencies of surveys in areas not stated in this procedure shall be determined by the responsible RST Supervisor. Frequency is based on:

5.2.1 Changes in work routine.

5.2.2 Changes in the occupancy of the area.

5.2.3 Changes in personnel access to the area

5.2.4 Construction, demolition or decommissioning work that requires a Radiation Work Permit.

5.2.5 History of area contamination.

6.0 PROCEDURE

6.1 For fixed contamination surveys for depleted or natural uranium beta-gamma instruments alone may be used for activity determination.

6.2 Direct frisk with a G-M pancake probe

6.2.1 If the background exceeds 300 cpm, the item being surveyed should be moved to an area where the background is <300 cpm if possible. If this is not possible the background should be noted on the survey form.

6.0 PROCEDURE (continued)

6.2.2 The probe shall not be moved faster than 3 inches per second to detect 100 cpm above background.

6.2.3 Beta-gamma probes shall be within 1/2" of the surface that is being monitored.

6.2.4 Frisk desired area, determine average reading in cpm, subtract background cpm, and multiply result by four to determine dpm per probe area.

6.2.5 To determine dpm per 100 cm^2 using a G-M pancake probe, multiply cpm above background times ten.

6.2.6 Record the contamination level in the "Fixed Plus Removable" column of the Radiological Survey Report (Attachment A).

6.2.7 Dry smears shall be taken whenever direct frisk indicates activity exceeding applicable limits for removable activity.

6.3 Direct frisk with an alpha instrument

6.3.1 If the background exceeds 20 cpm, the item being surveyed should be moved to an area where the background is < 20 cpm if possible. If this is not possible the background should be noted on the survey form.

6.3.2 The probe shall be held stationary for 5 seconds. If an audible signal or meter movement is detected, hold the probe stationary for an additional 15 seconds.

6.3.3 Alpha probes must be within 1/8" of the surface being frisked.

6.3.4 Frisk the desired area and determine the average reading in cpm.

6.3.5 Subtract the background cpm, and multiply the result by ten to determine dpm per probe area. For alpha scintillator probes dpm per 100 cm^2 shall be considered equal to dpm per probe area.

6.3.6 Record the contamination level on the Radiological Survey Report (Attachment A).

6.3.7 Dry smears shall be taken whenever direct frisk indicates activity exceeding applicable limits for removable activity.

6.4 Smears

6.4.1 Protective gloves should be worn when taking smears.

6.0 PROCEDURE (continued)

6.4.2 Dry Smooth Surface Smears

6.4.2.1 Using dry paper or cloth smears, trace approximately a 40 cm (16") long "s" figure or approximately a 100 cm^2 area unless otherwise required by a specific procedure.

6.4.2.2 Apply moderate pressure with at least two fingers.

6.4.2.3 Analyze smears as outlined in step 6.4.5.

6.4.2.4 Record analysis data for the area smeared in the "Removable" column of the Radiological Survey Report (Attachment A). For areas where it is not feasible to smear 100 cm^2 a comment shall be included indicating the approximate area smeared.

6.4.3 Gross-area Smears

6.4.3.1 Wipe a large area, several hundred square centimeters or greater, with a standard smear or a large absorbent cloth, such as masslin.

6.4.3.2 Frisk the smear directly with a portable alpha or beta/gamma survey instrument for indication of the presence of contamination. Removable contamination detected should be averaged over the area smeared.

6.4.3.3 Gross-area smears that indicate no detectable contamination can be used to confirm that removable contamination is less than the MDA of the instrument used to count the smear divided by the area smeared.

6.4.3.4 Gross-area smear results shall be reported in the "Removable" column of the Radiological Survey Report (Attachment A). A comment shall be included indicating that a large area smear was used and the approximate area smeared.

6.4.4 Smears on other surfaces

6.4.4.1 Conduct surveys as described in step 6.4.2, except cloth smears shall be used when the material to be smeared is too coarse to adhere to smear paper, the surface is rough and porous, or the contamination loosely adheres to the surface.

6.4.4.2 It is permitted to smear wet areas, inside spill-area boundaries, or areas where loose surface contamination is expected but is not detectable using dry smears. Wet smears shall be allowed to dry before counting.

6.0 PROCEDURE (continued)

6.4.5 Smear Sample Analysis

6.4.5.1 Smears taken to detect activities above the portable instrument MDA should be counted with field survey instruments as outlined in procedure SP-P-35-046 "Counting Smears with Field Survey Instruments".

6.4.5.2 Smears taken to detect activities less than the MDA of the portable survey instrument shall be counted on a low background counting system per SP-P-35-37,"Operation of the Tennelec Automatic Low Background Counting Systems (LB5100 Series II/III and LB5100/5500.)".

6.5 Documentation

6.5.1 Radiological contamination surveys shall be documented using the Radiological Survey Report (Attachments A and B) or equivalent.

6.5.2 Any unusual events or conditions that may influence the survey results shall be noted on the survey form (i.e., porous surface, wet smears).

6.5.3 All reported readings shall be clearly specified as dpm/probe area, dpm/100 cm^2 or dpm/area smeared for gross-area smears.

6.5.4 All instruments used in performing the survey shall be recorded on the Radiological Survey Report. Documentation of the inspection and performance test of the instruments may be recorded on the survey report in accordance with procedure SP-P-35-028 "Inspection and Performance Testing of Portable Radiation Survey Instruments."

6.5.5 Maps should be used wherever possible so that survey locations can be accurately documented. Each map page shall be included in the total pages of the survey report.

6.5.6 Readings less than MDA shall be recorded as "< MDA". The value(s) for MDA for each instrument used shall be recorded on the survey report.

6.5.7 When information is to be entered into the Flow Gemini Database, grid coordinates shall be used to identify the survey location.

6.5.8 All analysis data printouts shall be attached to the survey report.

6.5.9 All survey forms shall be signed and dated by the RST(s) performing the survey.

6.0 PROCEDURE (continued)

6.5.10 Completed Radiological Survey Reports shall be reviewed, dated and initialed in the provided box by the responsible RST supervisor.

6.5.10.1 The RST Supervisor shall inform the RST of follow-up requirements and/or surveys when required.

6.5.10.2 The RST shall notify the facility supervisor, radiological safety technician supervisor, and Radiological Assessment promptly of any areas requiring decontamination.

6.5.11 A copy of all survey reports shall be on file for one quarter in the custody of the RST Supervisor. All reports exceeding one quarter of date of the survey shall be removed from the files and prepared for long term storage in the vault.

6.5.12 Copies of the completed Radiological Survey Report shall be distributed as required per the distribution list at the bottom of the form.

6.6 Schedule

6.6.1 Unless otherwise specified by this procedure, all scheduled surveys shall be for loose contamination only. More frequent surveys or performing fixed plus removable surveys may be specified by the responsible RST supervisor or Radiological Engineer through the RST supervisor.

6.6.2 Controlled Areas

6.6.2.1 At least quarterly.

6.6.2.2 Break rooms, offices, and drinking areas within controlled areas shall be surveyed at least weekly. Fixed plus removable surveys shall be performed at least annually.

6.6.2.3 Approved eating areas within controlled areas shall be surveyed at least daily. Fixed plus removable surveys shall be performed at least annually.

6.6.3 Regulated Areas

6.6.3.1 At least monthly. Fixed plus removable surveys shall be performed at least annually.

6.6.3.2 Drinking fountains and water coolers within Radiological Areas shall be surveyed daily.

6.0 PROCEDURE (continued)

6.6.4 Contamination Areas

6.6.4.1 At least annually.

6.6.5 Radiation Areas

6.6.5.1 At least semi-annually. Fixed plus removable surveys shall be performed at least annually.

6.6.6 High Radiation Areas

6.6.6.1 At least annually. Surveys shall be performed prior to work being performed in the area.

6.6.7 Control Points (from contamination areas)

6.6.7.1 Based on usage. Control points used on a daily basis shall be surveyed daily.

6.6.8 Control Points (from regulated areas)

6.6.8.1 At least weekly.

6.6.9 Control Points (from controlled areas)

6.6.9.1 At least daily

NOTE: In cases that two classifications apply, such as an areas that is a contamination area and a radiation area, the more frequent survey requirements of the two classifications apply.

7.0 APPLICABLE DOCUMENTS

7.1 SP-P-35-046, "Counting Smears with Field Survey Instruments".

7.2 SP-P-35-028, "Inspection and Performance Testing of Portable Radiation Survey Instruments".

7.3 SP-P-35-37, "Operation of the Tennelec Automatic Low Background Counting Systems (LB5100 Series II/III and LB5100/5500.)".

8.0 FORMS USED

8.1 FS-F-1993-1, Radiological Survey Report

8.2 FS-F-1993-2, Radiological Survey Report (Continuation Sheet)

9.0 ATTACHMENTS

9.1 Attachment A, Radiological Survey Report

9.2 Attachment B, Radiological Survey Report (Continuation Sheet)

ATTACHMENT A

RADIOLOGICAL SURVEY REPORT

Fernald Site
IRS&T - RADIOLOGICAL SAFETY
RADIOLOGICAL SURVEY REPORT

DATE	LOCATION	PRINT NAME	PAGE
TIME	LEVEL	SIGNATURE	1 of ___
REASON FOR SURVEY			

INSTRUMENTS

MODEL	SERIAL NUMBER	TYPE (α, β, γ)	CALIBRATION-DUE DATE	BKGD. (cpm)	EFF./CF	MDA (dpm)	IBSP / PERFORMANCE TEST SAT? YES	NO

ITEM NUMBER	LOCATION AND/OR DESCRIPTION	DPM/100cm² ALPHA		DPM/100cm² BETA-GAMMA		CORRECTED DOSE RATE (MREM/HR)			
						γ	Δ/γ	γ	Δ/γ
		REMOVABLE	FIXED PLUS REMOVABLE	REMOVABLE	FIXED PLUS REMOVABLE	CONTACT	CONTACT	AT ___ FT.	AT ___ FT.

NO.	DISTRIBUTION OF COPIES
1	Radiological Safety Supervisor
2	Facility Supervisor
3	Operable Unit Manager

NOTIFICATION OF SURVEY RESULTS

SUPERVISOR NOTIFIED	TIME	DATE	NOTIFIED BY	REVIEWED BY	DATE

FS-F-1993-1 (REV. 11/7/91)

3688

ATTACHMENT B

RADIOLOGICAL SURVEY REPORT (CONTINUATION SHEET)

Fernald Site

IRS&T - RADIOLOGICAL SAFETY

RADIOLOGICAL SURVEY REPORT - CONTINUATION SHEET Page ____ of ____

ITEM NUMBER	LOCATION AND/OR DESCRIPTION	DPM/100cm² ALPHA		DPM/100cm² BETA-GAMMA		CORRECTED DOSE RATE (MREM/HR)			
						γ	β/γ	γ	β/γ
		REMOVABLE	FIXED PLUS REMOVABLE	REMOVABLE	FIXED PLUS REMOVABLE	CONTACT	CONTACT	AT ____ FT.	AT ____ FT.

FS-F-[illegible] (REV. [illegible])

ISSUE AND REVISION RECORD

DATE OF CHANGE	REVISION NUMBER	AFFECTED PAGES	REASON FOR REVISION
01/02/91	0	ALL	Original issue of procedure
06/21/91	1	ALL	To include procedure for performing Gross-area smears and to recommend field counting smears wherever applicable.
01/22/92	2	ALL	To denote that the MDA for direct frisk is different than the MDA of smear counting when using portable instrumentation, to allow direct frisks in higher background provided it is documented, to reformat schedule to be based on area classification, and to update Radiological Survey Report Form.

APPENDIX G

MATERIAL EVALUATION FORM
SSOP-0002

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

3688

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.

R - MATERIAL REVISED, ADDED, OR DELETED.

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.

R - MATERIAL REVISED, ADDED, OR DELETED.

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.

R - MATERIAL REVISED, ADDED, OR DELETED.

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.

R - MATERIAL REVISED, ADDED, OR DELETED.

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.

R - MATERIAL REVISED, ADDED, OR DELETED.

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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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 BULDING 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	☐ Ink	☐ 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 ink 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)

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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 261.4(a)? ☐ YES ☐ NO
3. IS IT EXCLUDED UNDER 261.4 - (b)? ☐ YES ☐ NO
4. DOES IT CONTAIN A LISTED WASTE AS PER 261 SUBPART D? ☐ 1 ___ ☐ 2 ___ ☐ 3 ___ ☐ 4 ___ ☐ NOT LISTED
5. DOES IT EXHIBIT ANY CHARACTERISTICS AS PER 261 SUBPART C? ☐ YES ☐ NO EXPLAIN
6. IS T & RQ HAZARDOUS SUBSTANCE? ☐ YES ☐ NO POUNDS
7. CLASSIFICATION AS A WASTE ☐ Needs Further Action (no sampling) ☐ RCRA Hazardous Waste ☐ Source Exempt ☐ Non-RCRA Waste ☐ Radioactive EXPLAIN:
8. PRIMARY BASIS FOR CLASSIFICATION ☐ Generator Information ☐ Prior material evaluation WHAT MATERIAL? LOT NUMBER
9. IS IT SUBJECT TO LAND 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. SAMPLING REQUIRED? ☐ YES ☐ NO
14. TRANSFER TO CONTROLLED HOLDING AREA REQUIRED? ☐ YES ☐ NO DATE
15. INFORMATION ACTION COMPLETION DATE
16. HEALTH AND SAFETY CONCERNS REQUIREMENTS
16. a. 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 ☐ UN ☐ NA SUFFIX
5. EPA WASTE NO
6. APPLICABLE REACTIVITY GROUP CODES (COPY FROM SECTION III, ITEM 2)
7. FEMP SRC AND MTC (COPY FROM SECTION I, ITEM 4) 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
IPS&T	DATE
FACILITIES AND WAREHOUSING	DATE
FEME	DATE
CONTROLLED HOLDING AREA	DATE

10. PRIMARY CONTACT INDIVIDUAL EXTENSION DATE COMPLETED

FS-F 3252 REV 10/1991 Sheet 2

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

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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.

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