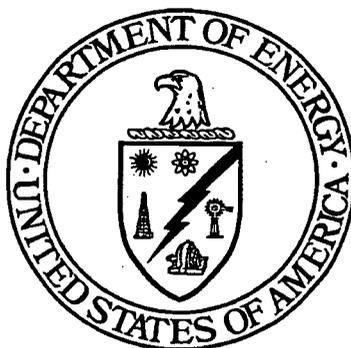


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**AREA 4B
SILOS UTILITY TRENCH
EXCAVATION PLAN
PHASE I**

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



MARCH 2003

**U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE**

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REVISION A
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Drawing 99X-5500-G-00767 Area 4B Silos Utility Trench Excavation Plan, Phase I

LIST OF ACRONYMS AND ABBREVIATIONS

AWWT	Advanced Waste Water Treatment (Facility)
D&D	Decontamination and Dismantlement
FCP	Fernald Closure Project
GML	geomembrane liner
OSDF	On-Site Disposal Facility
SDFP	Soil and Disposal Facility Project
WAC	waste acceptance criteria
WPRAP	Waste Pits Remedial Action Project

AREA 4B SILOS UTILITY TRENCH EXCAVATION PLAN, PHASE I**1.0 PURPOSE**

The purpose of this document is to describe the Soil and Disposal Facility Project's (SDFP) strategy for Phase I excavation of the K-65 utility trench within Area 4B. Excavation of the K-65 trench within Area 4B will occur in three phases. Phase I will excavate a portion of K-65 trench known to contain material that exceeds On-Site Disposal Facility (OSDF) waste acceptance criteria (above-WAC) from the path of Area 3B/4B isolation trenching prior to performance of the trenching in August of 2003, to avoid potential spread of above-WAC material. Phase I will also involve removing residues from within the bottom of the trench between "A" Street and the west side of Hooperville Road. Phase II will excavate the remainder of the trench except for the portion underlying Hooperville Road. Phase III will establish a temporary Hooperville Road bypass to allow for excavation of the portion of K-65 Trench underlying Hooperville Road while provide access to Hooperville. Phases II and III are governed by the Area 3B/4B/5 Integrated Remedial Design Package, and will be implemented later in the 2003 construction season.

This plan presents general methodology of SDFP-specific activities for Phase I of the K-65 trench excavation, to be performed prior to Area 3B/4B isolation trenching. Phase I trench excavation is not for remediation, but for the removal of above-WAC material within the trench. The key excavation elements are removal of K-65 trench sediments followed by excavation of a 20-foot long section of the trench in the path of Area 3B/4B isolation trenching. Phase I trench excavation will be completed in Fiscal Year 2003 as described in following sections.

2.0 BACKGROUND

The Area 7, Phase I soil remedial excavation was performed during the Summer and Fall of 2002 in order to prepare a remediated footprint for construction of the Silos Project Remediation Facility and support structures at the Fernald Closure Project (FCP). As part of this activity, K-65 trench was excavated from approximately 20-feet west of the East Silos Access Road to the east, to immediately west of Hooperville Road near the southeast corner of the Lime Sludge Ponds. Prior to excavation, Decontamination and Decommission (D&D) removed the piping from within the trench and the metal decking on top of the trench. Based on sampling and characterization, the soil-like/sediment residues in the bottom of the trench were above-WAC due to elevated levels of technetium-99. In general, this

1 residue, along with the concrete and 2-feet of soil alongside and underlying the concrete, was excavated
2 for disposal at SP-7. Following sediment removal from within this portion of the trench and prior to
3 trench excavation, a grout plug was installed in the trench near the southeast corner of the Lime Sludge
4 Ponds. This 12 to 18-inch thick plug remains in place to prohibit migration of trench sediment into
5 surrounding soil.

6
7 The portion of K-65 trench remaining from immediately west of Hooperville Road extending into the
8 Former Production Area will be excavated and remediated under Area 4B trench excavation phases I, II
9 and III. As previously stated, this plan addresses Phase I of Area 4B trench excavation necessary to
10 remove the above-WAC trench sediment, concrete and surrounding soil from the path of proposed
11 Area 3B/4B isolation trenching.

12 13 3.0 EXCAVATION LIMITS

14 The limit of trench sediment removal is the stretch of K-65 trench from the west side of "A" Street to the
15 west side of Hooperville Road. The trench itself will be excavated within an approximate 20-foot long
16 by 8-foot wide by 6-foot deep excavation bounded by the coordinates shown on the Utility Trench
17 Excavation Plan (Drawing 99X-5500-G-00767).

18 19 4.0 SUMMARY OF CHARACTERIZATION DATA

20 The K-65 trench excavation has been identified as above-WAC for technetium-99 based on process
21 knowledge and characterization data previously presented in the Area 7 Excavation and Precertification
22 Strategy, Phase I. Based on verbal discussions with Ohio Environmental Protection Agency during
23 development of Area 7, Phase I design, the entire K-65 trench will be excavated to a depth of 2 feet
24 below the concrete base and sides of the trench. This is considered a conservative approach because
25 there is no physical data indicating the presence of above-WAC contamination beneath the concrete of
26 the trench. However, it is assumed that there are cracks in the trench concrete that would have allowed
27 the mobile technetium-99 contamination to migrate beneath the trench itself. Phase I trench excavation
28 will be performed by: 1) removing the sediment as above-WAC, 2) breaking and removing the concrete,
29 which will also be treated as above-WAC material, and 3) performing one excavation lift to remove the
30 planned 2 feet of soil beneath and beside the concrete. Physical samples will be collected at each end of
31 the 20-foot long phase I trench excavation, at the base of the trench and on each sidewall, to control the
32 technetium-99 above-WAC contaminant.

1 5.0 EXCAVATION METHODOLOGY

2 Based on sampling and characterization information, the soil-like/sediment residue in the bottom of the
3 K-65 trench is above-WAC due to elevated levels of technetium-99 (see section titled "Above-WAC
4 Area Excavations in 3B/4B"). In general, this residue, along with the concrete and 2 feet of soil
5 alongside and underlying the concrete, will be excavated for disposal directly at Waste Pits Remedial
6 Action Project (WPRAP). Since the proposed Area 3B/4B utility isolation trench must cut across the
7 K-65 trench, an approximate 20-foot section of the K-65 trench will be excavated where the proposed
8 utility isolation trench will intersect.

9
10 Prior to October 2003, a direct contaminated haul route from this excavation area to WPRAP will not
11 exist; therefore, the volume of above-WAC material excavated during Phase I excavation in support of
12 utility isolation trenching will be minimized. The remainder of the K-65 trench will be removed during
13 the winter 2003/2004 Area 3B/4B excavation.

14
15 Piping within the trench has already been removed by D&D. Prior to excavation, D&D will remove the
16 metal decking from the top of the trench east of Hooperville Road. SDFP excavation activities will use a
17 backhoe equipped with a smooth-edge bucket to remove the bulk of the sediment from the bottom of the
18 K-65 trench from "A" Street to Hooperville Road. The backhoe will dump the excavated material into
19 an articulated truck for hauling and disposal at WPRAP. Geomembrane will be placed on the ground
20 wherever excavated material is transferred from the backhoe to the articulated truck to minimize the
21 spread of technetium-99 contamination to adjacent areas.

22
23 A trash pump will remove the majority of water in the bottom of the trench prior to sediment removal.
24 Since the K-65 trench slopes from east to west, the trash pump will be located at the western most limit
25 of the trench. The remaining residues within the trench will be washed from east to west using a power
26 washer. Waste water from this process will be pumped from the sump into a nearby hose connector
27 located above the surface at the southeast corner of the Lime Sludge Ponds. This hose connector directs
28 water underground to manhole MH168 through a 6-inch storm sewer line for subsequent AWWT Phase I
29 treatment via the Storm Water Retention Basins.

30
31 Concrete plugs will be installed in the K-65 trench on both sides of the limited excavation required to
32 support the utility isolation trench. Trench concrete will be broken, excavated, and disposed at WPRAP.

1 The concrete will be kept wet during the trench breaking to control dust and will be sized reduced to
2 meet WAC for WPRAP. Approximately 2 feet of soil beneath the trench and adjacent to the sidewalls
3 will be excavated and disposed at WPRAP. The sidewalls of the excavation will essentially be vertical
4 until completion of real-time scanning. A safety barricade of construction fence or rope will bound the
5 excavation due to the fall hazard. Physical samples will be collected at each end of the 20-foot long
6 Phase I trench excavation, at the base of the trench and on each sidewall, to control the technetium-99
7 above-WAC contaminant. Geomembrane liner (GML) will be draped over the entire exposed ends of the
8 excavation as shown on Drawing 99X-5500-G-00767 to restrict lateral migration of technetium-99 in the
9 remaining trench and adjacent soils. Soil will be placed over the top edge of the excavation to anchor
10 GML in place. The sides of the excavation will then be pushed into the hole, keeping the GML in place.
11 The backfilled area will then be graded and compacted as necessary to provide a firm path for the
12 trencher.

13

14 6.0 SURFACE WATER CONTROL

15 The K-65 trench slopes towards the west where the water will be collected and pumped into a nearby
16 hose connector located above the surface at the southeast corner of the Lime Sludge Ponds. This hose
17 connector directs water underground to manhole MH168 through a 6-inch storm sewer line for
18 subsequent AWWT Phase I treatment via the Storm Water Retention Basin.

19

20 7.0 DUST CONTROL

21 Dust will be controlled using standard methods deployed in other on-site remedial excavation projects
22 (e.g., keeping concrete wet when breaking or size reducing, and using water trucks in excavation areas
23 and along haul routes to keep ground surface damp).

24

25 8.0 REFERENCES

26 U.S. Department of Energy, 1998, "Project Specific Plan for WAC Attainment Sampling of Area 7
27 Soils," Revision 0, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati,
28 Ohio.

29
30 U.S. Department of Energy, 2001, "Implementation Plan for Area 3B/4B/5," Revision A, Fernald
31 Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

32
33 U.S. Department of Energy, 2002, "Area 7 Excavation and Precertification Strategy, Phase I,"
34 Revision A, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

GENERAL NOTES

- SEE DRAWING 99X-5500-X-00639 FOR LEGEND AND GENERAL NOTES.
- SEE THE LATEST REVISIONS OF UNDERGROUND UTILITY GRID DRAWINGS 220-5500-P-00678 (GRID 19) AND 220-5500-P-00684 (GRID 29) FOR INFORMATION PERTAINING TO UNDERGROUND UTILITIES IN THE AREA.
- THIS DRAWING PROVIDES DETAILS, LIMITS AND GENERAL SEQUENCING FOR EXCAVATION OF ABOVE-WAC SEDIMENTS FROM THE REMAINING SECTION OF UTILITY TRENCH WITHIN AREA 4B AND EXCAVATION OF A 20 FEET LONG SECTION OF THE TRENCH IN THE PATH OF 38/48 UTILITY ISOLATION TRENCHING.
- FIELD VERIFY THAT PIPING WITHIN THE UTILITY TRENCH HAS BEEN REMOVED BY OTHERS.
- EXCAVATION LIMITS SHOWN REPRESENT THE MINIMUM EXCAVATION REQUIRED TO CAPTURE CONTAMINATION AND UTILITY TRENCH MATERIAL. SEDIMENT WITHIN THE UTILITY TRENCH, THE TRENCH CONCRETE AND 2 FEET OF SOIL ALONGSIDE AND UNDERNEATH THE UTILITY TRENCH SHALL BE DISPOSED OF AT WPRAP AS ABOVE-WAC MATERIAL.
- PLACE GEOMEMBRANE LINER ON THE GROUND WHERE EXCAVATED MATERIAL IS TO BE TRANSFERRED FROM ONE VEHICLE TO ANOTHER.
- EXCAVATE ABOVE-WAC MATERIAL IN ACCORDANCE WITH SPECIFICATION SECTION 02205 AND AS DIRECTED BY THE CONSTRUCTION MANAGER. THE CONSTRUCTION MANAGER WILL VERIFY THE LIMITS OF ABOVE-WAC EXCAVATION IN THE FIELD AND EXPAND THE EXCAVATION AS NECESSARY.
- SIZE REDUCE TRENCH CONCRETE TO MEET WPRAP WAC IN ACCORDANCE WITH SPECIFICATION SECTION 02205. WET CONCRETE DURING BREAKING AS NECESSARY TO CONTROL DUST.
- SURVEY FINAL LIMITS OF SEDIMENT REMOVAL AND UTILITY TRENCH EXCAVATION.
- INSTALL WIREMESH CONSTRUCTION SAFETY FENCE AROUND THE TRENCH EXCAVATION AND HANG "DANGER-OPEN EXCAVATION" SIGNAGE AS DIRECTED BY THE CONSTRUCTION MANAGER.
- PERFORM WORK IN ACCORDANCE WITH THE APPROVED CONSTRUCTION TRAVELER PACKAGE.

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KEYED NOTES

- (A) PUMP WASH WATER COLLECTED IN THE UTILITY TRENCH TO THE STANDPIPE LOCATED IN THE SOUTHEAST CORNER OF THE LIME SLUDGE PONDS.
- (B) GEOMEMBRANE MATERIAL SHALL MEET OR EXCEED THE MATERIAL PROPERTIES SPECIFIED IN SPECIFICATION SECTION 02770.

PRELIMINARY
NOT FOR CONSTRUCTION

A	ISSUED FOR AGENCY REVIEW	3/04/03	RML
REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	DATE	REV. BY
			DETAILS AND DATE

UNITED STATES
DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
FLUOR FERNALD, INC.

PROJECT NAME
SOIL REMEDIATION

DRAWING TITLE
AREA 4B
SILOS UTILITY TRENCH EXCAVATION PLAN
PHASE I

APPROVALS

COGNIZANT ENG.	SAFETY ENG.
CIVIL & STR.	MAINTENANCE
ELECTRICAL	FIRE PROTECT.
ENGINEER	WASTE MANAGE.
INSTRUMENT	SECURITY
MECHANICAL	QA
	CONSTRUCTION

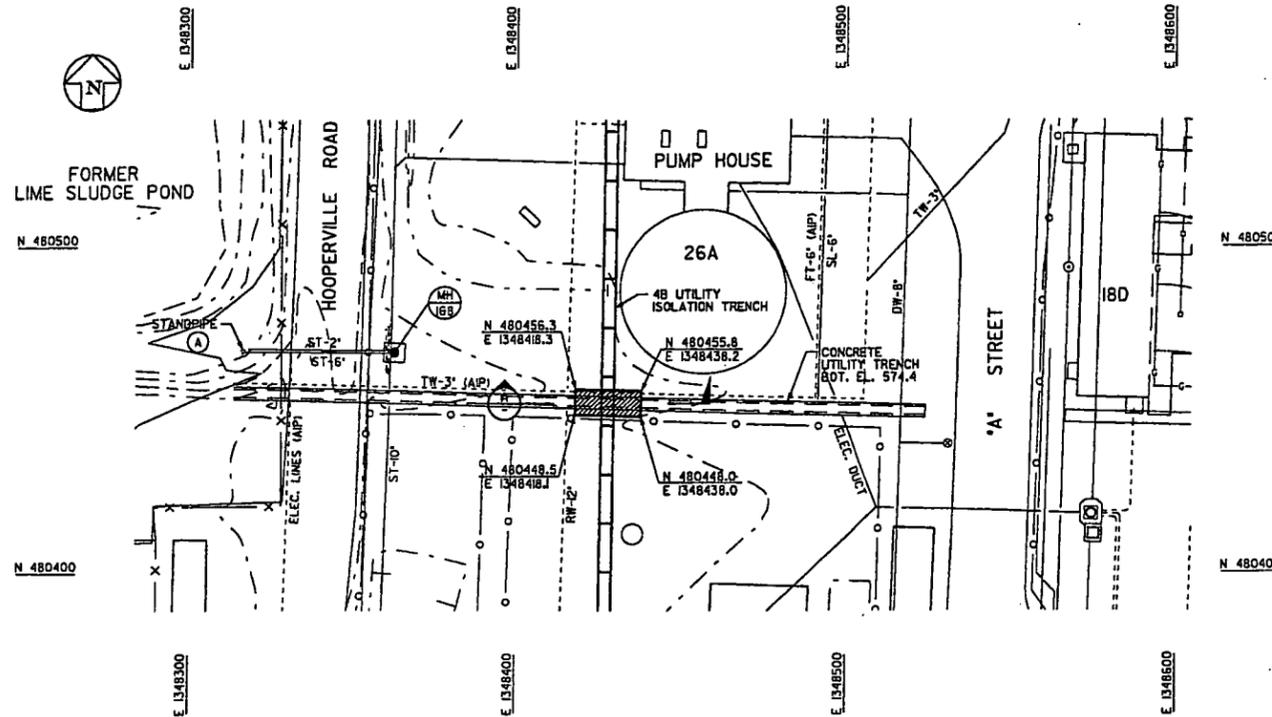
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APPROVED

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REV. PROJECT NO.	99X-5500-G-00767			A

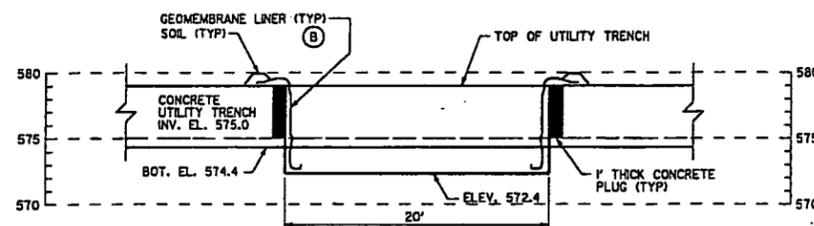
CONSTRUCTION & DEWATERING NOTES

THE FOLLOWING SEQUENCE DOES NOT SUPERCEDE REQUIREMENTS SPECIFIED IN THE TECHNICAL SPECIFICATION OR CONSTRUCTION DRAWINGS, RATHER IT IS INTENDED TO PRESENT GENERAL GUIDANCE FOR SEQUENCING:

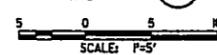
- INSTALL A TRASH PUMP IN THE UTILITY TRENCH WEST OF HOOPERVILLE ROAD. PUMP WATER FROM THE TRENCH TO THE STAND PIPE LOCATED AT THE SOUTHEAST CORNER OF THE LIME SLUDGE PONDS.
- EXCAVATE ABOVE-WAC SEDIMENT FROM THE PORTION OF THE UTILITY TRENCH REMAINING BETWEEN 'A' STREET AND HOOPERVILLE ROAD AND DISPOSE OF THE SEDIMENT IN ACCORDANCE WITH SPECIFICATION SECTION 02205. REMOVE THE METAL PLATE FROM OVER THE UTILITY TRENCH AS EXCAVATION PROCEEDS.
- WASH THE UTILITY TRENCH FROM EAST TO WEST USING A PRESSURE WASHER TO CLEAN THE TRENCH OF ABOVE-WAC SEDIMENT RESIDUE. COLLECT WASH WATER IN THE WESTERN PORTION OF THE TRENCH AND PUMP IT INTO THE STAND PIPE LOCATED IN THE SOUTHEAST CORNER OF THE LIME SLUDGE PONDS.
- INSTALL CONCRETE PLUGS IN THE TRENCH JUST BEYOND THE LIMITS OF THE PROPOSED 20-FOOT SECTION EXCAVATION AS SHOWN IN SECTION A.
- EXCAVATE THE 20-FOOT LONG SECTION OF UTILITY TRENCH DESIGNATED BY COORDINATES SHOWN IN THE PLAN VIEW TO ELEVATION 572.4. DISPOSE OF SOIL AND DEBRIS IN ACCORDANCE WITH SPECIFICATION SECTION 02205.
- UPON COMPLETION OF UTILITY TRENCH EXCAVATION, DECONTAMINATE THE EXCAVATOR BUCKET WITHIN THE HAUL TRUCK BED AS DIRECTED BY THE CONSTRUCTION MANAGER.
- THE CONSTRUCTION MANAGER WILL ARRANGE FOR REAL-TIME MONITORING AND/OR PHYSICAL SAMPLING AT THE EXCAVATION LIMITS.
- DRAPE GEOMEMBRANE LINER OVER THE ENTIRE EXPOSED ENDS OF THE EXCAVATION TO A DEPTH OF 572.4 AS SHOWN IN SECTION A.
- PLACE SOIL ON THE GEOMEMBRANE LINER AT THE TOP EDGE OF THE EXCAVATION AS SHOWN IN SECTION A SUFFICIENT TO ANCHOR THE LINER IN PLACE.
- BACKFILL THE EXCAVATION BY PUSHING THE SIDES OF THE EXCAVATION INTO THE HOLE, KEEPING THE GEOMEMBRANE IN PLACE.
- GRADE THE AREA TO PROVIDE A GRADUAL DIP IN THE PROPOSED PATH OF THE ISOLATION TRENCH. COMPACT THE AREA WITH FOUR PASSES OF EXCAVATION EQUIPMENT TO PROVIDE A FIRM PATH FOR THE TRENCHER.



PLAN



SECTION A



7