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**RESPONSE ACTION SUMMARY/CLOSURE PLAN
INFORMATION FOR WASTE PIT 5
SEPTEMBER 1991**

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FOR WASTE PIT 5**

**U.S. DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO**

SEPTEMBER 1991

SUBMITTED BY:

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FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
7400 WILLEY ROAD
FERNALD, OHIO 45030**

DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

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FOR WASTE PIT 5

SEPTEMBER 1991

Submitted by:

U.S. Department of Energy
Fernald Environmental Management Project
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ACRONYMS

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AEA	Atomic Energy Act
ARARs	Applicable or Relevant and Appropriate Requirements
BDAT	Best Demonstrated Available Technology
BMP	Best Management Practices
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DOE	Department of Energy
EDPM	Ethylene-Diene-Propylene Monomer
EP	Extraction Procedure
ETF	Experimental Treatment Facility
EWMF	Engineered Waste Management Facility
FEMP	Fernald Environmental Management Project
FFCA	Federal Facilities Compliance Agreement
FMPC	Feed Materials Production Center
FR	Federal Register
HEAST	Health Effects Assessment Summary Tables
HSL	Hazardous Substances List
HSWA	Hazardous and Solid Waste Amendments
HWMU	Hazardous Waste Management Unit
LDRs	Land Disposal Restrictions
LLRW	Low Level Radioactive Waste
NCP	National Oil and Hazardous Substances Contingency Plan
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
OAC	Ohio Administrative Code
OEPA	Ohio Environmental Protection Agency
OSHA	Occupational Safety and Health Administration/Act
OU	Operable Unit
PACD	Proposed Amended Consent Decree
PCBs	Polychlorinated Biphenyls
PP	Proposed Plan
QAPjP	Quality Assurance Project Plan
RAS/CPI	Response Action Summary/Closure Plan Information
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design and Remedial Action
RI/FS	Remedial Investigation and Feasibility Study
ROD	Record of Decision
RSE	Removal Site Evaluation
SAP	Sampling and Analysis Plan
TBC	To Be Considered
TEGD	Technical Enforcement Guidance Document
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal
USC	United States Code
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

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This document provides an informational summary to the Ohio Environmental Protection Agency (OEPA) describing the proposed response action activities and closure plan information for Waste Pit 5. Waste Pit 5 is a surface impoundment Hazardous Waste Management Unit (HWMU) at the Fernald Environmental Management Project (FEMP), formerly known as the Feed Materials Production Center (FMPC). This document fulfills the intent of the commitment made by the Department of Energy (DOE), in the Proposed Amended Consent Decree, to supply the OEPA with a submittal for Waste Pit 5 setting forth the closure plan information, data and schedules for review, comment and approval. This document is designed to integrate the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) requirements for the management of hazardous and radioactive ("mixed") wastes in the closure of Waste Pit 5 in order to minimize the potential for release or threat of release of hazardous substances from the unit until final remediation is performed under CERCLA actions at Operable Unit 1 (OU-1). Under the Federal Facility Compliance Agreement (FFCA) dated July 18, 1986, the DOE is obligated to comply with RCRA regulations while performing the remediation and closure of units under CERCLA action. In order to meet the regulatory requirements, CERCLA actions will incorporate RCRA closure requirements and all other Applicable or Relevant and Appropriate Requirements (ARARs) to the extent practicable.

Seven Remedial Action Alternatives are being evaluated in the Remedial Investigation and Feasibility Study (RI/FS) for final CERCLA remediation of the unit. Integration of RCRA/CERCLA requirements within the Response Action Summary/Closure Plan Information (RAS/CPI) will be consistent with the RCRA closure performance standard, and the Record of Decision (ROD) for OU-1. Disposal and decontamination of equipment, structures and soils will depend on the Remedial Alternative eventually selected. The schedule for closure of the unit and a contingent post-closure plan will be determined by the Remedial Design/Remedial Action (RD/RA) Work Plan following issuance of the Record of Decision (ROD) for OU-1.

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1.0 INTRODUCTION

This document provides a Response Action Summary/Closure Plan Information (RAS/CPI) describing a proposed Closure Plan/Response Action for Waste Pit 5. The objective of the RAS/CPI is to outline the Resource Conservation and Recovery Act (RCRA) closure requirements for the unit, and integrate these requirements into ongoing activities at the unit under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at the Fernald Environmental Management Project (FEMP). This integration will minimize the potential release of contaminants from Waste Pit 5 until final remediation is performed under CERCLA remedial actions for OU-1. This document, initiated by the Department of Energy (DOE), is being submitted to the Ohio Environmental Protection Agency (OEPA) for review, comment, and approval. This document will be consistent with the Proposed Amended Consent Decree (PACD) between the DOE and the OEPA requiring a submittal for Waste Pit 5 describing the closure plan information, data, and schedules to meet the Ohio Administrative Code (OAC) 3745-66-10 through 20 (40 Code of Federal Regulations [CFR] Part 265 Subpart G Sections 110 through 120) requirements of RCRA. This informational summary is also being submitted to the United States Environmental Protection Agency (USEPA).

The FEMP is not proposing to perform physical closure of Waste Pit 5 at this time. Once the CERCLA Record of Decision (ROD) is complete, the physical closure of Waste Pit 5 can be integrated with the activities and approved time schedules designated in the Remedial Design/Remedial Action (RD/RA) Work Plan submitted in accordance with the April 9, 1990 Consent Agreement between the DOE and the USEPA (as amended by the September 1991 Consent Agreement). Any interim steps taken toward remediation of Waste Pit 5 will be consistent with RCRA closure of the unit and the final remediation of the OU-1 area.

This integrated RAS/CPI is designed to be protective of human health and the environment. The RAS/CPI will satisfy the closure performance standards for Waste Pit 5 under RCRA, the terms of the PACD, the Consent Agreement, and the July 18, 1986 Federal Facility Compliance Agreement (FFCA) between the DOE and the USEPA.

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1.1 RCRA Closure Plan Information and Status

Waste Pit 5 has been declared a Hazardous Waste Management Unit (HWMU). The OEPA is the lead agency for enforcement of RCRA regulations at the FEMP. Rules under OAC 3745-66-12 (40 CFR 265.112) require owners and operators of hazardous waste management facilities to have a written closure plan for hazardous waste Treatment, Storage, and Disposal (TSD) units. Rules under OAC 3745-66-10 through 20 (40 CFR 265.111 through 120) outline the basic requirements under RCRA for closure of a unit. Since the FEMP is a federally-owned facility, closure and post-closure cost estimates, liability requirements, and state required financial assurance mechanisms are not applicable.

The RAS/CPI has been written to provide a means to integrate the RCRA closure requirements and performance standards with the remedial activities of CERCLA as ARARs for Waste Pit 5. These standards are designed to protect human health and the environment from future releases of hazardous substances, hazardous waste or constituents from the unit undergoing closure or remediation.

The timeframe for completion and certification of RCRA closure for Waste Pit 5 will be delineated in the approved Remedial Action Work Plan. A Removal Site Evaluation (RSE) is currently being conducted to determine the need for Removal Actions prior to final remediation to address situations that pose an immediate threat to human health or the environment. While the RSE is being conducted, various closure activities for Waste Pit 5 may occur as interim CERCLA response actions. These actions will comply with all ARARs to the maximum extent possible, including any requirements pertaining to closure under RCRA, which are applicable as ARARs. In the event that significant changes or delays occur in the remedial action activities or schedule prior to the notification of final closure of Waste Pit 5, a written request for extension of time to complete the closure/response action activities will be submitted to the Director of OEPA for approval.

1.2 FEMP Objectives and Status

As required by the Consent Agreement, the 1982 National Oil and Hazardous Substances Contingency Plan (NCP), and the FFCA, the DOE is mandated to

comply with all ARARs unless a waiver is specifically granted per the NCP. In 1989, the Feed Materials Production Center (FMPC), now known as the FEMP, was placed on the National Priorities List (NPL).

CERCLA is implemented primarily through 40 CFR 300 which is known as the NCP. These regulations specify the objectives and framework to be used to conduct response actions to address any release or threat of release of hazardous substances. Although the DOE and the USEPA are the sole parties to the Consent Agreement governing CERCLA remediation at the site, the DOE has entered into a Consent Decree with the OEPA that stipulates compliance with RCRA requirements for HWMUs at the FEMP.

Closure or response actions at a unit under the CERCLA process involve a series of steps to achieve final remediation. CERCLA response actions begin with a preliminary assessment, site inspection, and data collection for developing the scope of the Remedial Investigation and Feasibility Study (RI/FS). The RI/FS scoping process defines ARARs, data quality objectives, likely response scenarios and remedial action objectives for the development of project plans for implementation of the RI/FS.

The objective of the Remedial Investigation (RI) is to sufficiently characterize and evaluate the site in terms of the wastes present, the fate and transport of contaminants, and the impact of the contaminants on human health and the environment. The RI provides characterization of site conditions, determines the nature and extent of contamination, establishes baseline risk assessments of human health and the environment, identifies chemical- and location-specific ARARs, and conducts treatability testing as necessary to evaluate the potential performance of the treatment technologies, being screened under the Feasibility Study (FS), to minimize any threat to human health and the environment.

The FS serves as the mechanism for the development, screening, and detailed evaluation of alternative remedial actions. The general phases of the FS are: identification of alternative treatment technologies, screening of alternatives, evaluation of performance and applicability of treatment technologies, and development of recommended remedial alternatives. The completion of the FS leads directly to the final stages

of the remedial process through a series of documents and actions starting with the Proposed Plan (PP).

The PP describes the results of the RI/FS and proposes the final action to be taken. The ROD, containing the selected remedial approach, outlines the final actions to be taken, the cleanup levels to be achieved, and the methods to be employed. The Consent Agreements provide that the RD/RA Work Plan be submitted within 60 days after the ROD is approved. Consistent with CERCLA Section 120, actual remedial activities, at facilities listed on the NPL, must be initiated within 15 months after the issuance of the ROD.

In the event that an imminent threat or potential imminent threat to human health and environment is encountered during the RI/FS process, a RSE will be conducted. Based on the RSE, removal actions will be implemented to minimize potential risks prior to final remediation pursuant to the ROD.

To expedite remediation, the site has been divided into five operable units that comprise the total scope of the CERCLA process at the FEMP site. In accordance with the Consent Agreement, operable units are defined as distinctive groupings of units and environmental media. OU-1, a 37.7 acre grouping, is comprised of a number of waste pits, including Waste Pit 5. Operable Unit 1 includes mixed solid and sludge wastes, and contaminated soil and water within the waste pit unit boundaries. Soil and groundwater outside the waste pit unit boundaries will be addressed under Operable Unit 5 (OU-5).

1.3 Integration of RCRA/CERCLA Requirements

The basic objective of CERCLA is the same as that of RCRA: to protect human health and the environment from any threat posed by contaminants. The major difference between the two programs is in the implementation. The need for an integrated approach that satisfies both the RCRA and CERCLA requirements for Waste Pit 5 is derived from overlapping RCRA/CERCLA regulations, enforceable by different regulatory authorities, that address the management of wastes in Waste Pit 5.

Pursuant to CERCLA Section 120 and the 1990 and 1991 USEPA/DOE Consent

Agreements, the final remediation of Waste Pit 5 will incorporate RCRA requirements as Applicable or Relevant and Appropriate Requirements (ARARs) under the CERCLA remedial action for OU-1. Integration of CERCLA/RCRA requirements within the RAS/CPI will be consistent with the performance standards established by the ROD for the Remedial Action Alternative selected. The draft ROD for the OU-1 area is scheduled for submittal to the USEPA in December 1994. This ROD will address the material in Waste Pit 5 and the contaminated soil within the boundaries of the waste pit. After the draft ROD for OU-1 is approved, construction will begin in the waste pit area to implement the Remedial Action Alternative defined within the RD/RA Work Plan.

CERCLA activities currently in progress in the waste storage area include:

- o the RI/FS characterization,
- o the Waste Pit Area Stormwater Runoff Control Removal Action,
- o the Waste Pit 5 Liner Repair Study,
- o the Waste Pit 3, 5, and Clearwell Berm Integrity Study, and
- o a Treatability Study.

Other related CERCLA activities include an OU-1 Emissions Control Study, and the Experimental Treatment Facility (ETF) Removal Action. These ongoing CERCLA activities are designed to not only minimize any immediate threat of releases to the environment from Waste Pit 5 and OU-1, but also to provide additional technical information and experimental data for analysis of alternatives and selection of the final remedial action (Section 6.0). The Remedial Action Alternatives for Waste Pit 5 will be described in more detail in Section 7.1.

2.0 FEMP SITE BACKGROUND INFORMATION

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The FEMP is a government owned, contractor operated federal facility formerly named the FMPC. The facility was used for the production of pure uranium metal cores and target element cores, and for the interim storage of low-level radioactive material for the DOE. The FEMP site is located on 1,050 acres in a rural area approximately 18 miles northwest of Cincinnati, Ohio. The production area is limited to an approximate 136 acre tract near the center of the FEMP site (Figure 1). The waste storage area, which contains Waste Pit 5, consists of another 37.7 acres. The villages of Fernald, New Baltimore, Ross, New Haven, Layhigh, and Shandon are all located within a 5 mile radius of the plant.

The former FMPC was constructed in 1951/1952 and began operation in 1953. The facility was established to separate uranium and its compounds from natural uranium ore concentrates for use in government defense programs. A wide variety of chemical and metallurgical processes were utilized to support the production of uranium metal products. In July 1989, when production ceased, the mission underwent a transition period. During this period, the primary focus was diverted from uranium metal production to waste management and environmental restoration.

Although production of uranium has ceased at the plant, the production facilities still exist. In addition, the site contains various waste management facilities including waste pits, concrete storage silos, fly ash disposal areas, a sanitary landfill, and lime sludge ponds.

2.1 History of Operation

Since the early 1950's, various chemical and metallurgical processes at the FEMP site have been used to manufacture uranium products. Consequently, a variety of wastes have been generated. These wastes include both hazardous wastes and low-level radioactive wastes. Prior to 1985, solid wastes were disposed in six pits, and three silos in the waste storage area (Figure 2). Surface water runoff from the waste pit surfaces, as well as excess impounded storm water from Waste Pit 5, was directed to a settling basin, followed by discharge to the wastewater treatment system prior to final discharge under FEMP's National Pollutant Discharge Elimination System (NPDES) permit to the Great Miami River. Since 1985,

wastes have been stored in drums for either future characterization and disposal, or reprocessing. Currently, all six of the designated waste pits are inactive. 2296

On March 9, 1985, the USEPA issued a Notice of Noncompliance to DOE identifying concerns over potential environmental impacts associated with the FEMP's past and current operations. On July 18, 1986, a FFCA was signed by DOE and USEPA. The FFCA was entered into pursuant to Executive Order 12088 (43 CFR 477.07) to ensure compliance with existing environmental statutes and regulations including CERCLA, RCRA, and the Clean Air Act. In particular, the FFCA was intended to ensure that environmental impacts associated with past and present activities at the FEMP are thoroughly and adequately investigated so that appropriate remedial response actions can be formulated, assessed, and implemented.

In response to the FFCA, a RI/FS was initiated pursuant to CERCLA Section 120 and 106(a). The 1986 FFCA was amended in the April 9, 1990 and September 20, 1991 Consent Agreements to ensure consistency of the program with the operable unit concept, and the current commitments of the RI/FS, without modifying the underlying objectives. The PACD, and a December 2, 1988 Consent Decree between the DOE and the OEPA require Waste Pit 5 remediation to be conducted in accordance not only with the CERCLA requirements outlined in the FFCA, but also with the RCRA closure requirements of OAC 3745-66-10 through OAC 3745-66-20 (40 CFR 265 Subpart G Sections 110 through 120).

2.2 Mixed Waste Issues

Due to contamination by radioactive materials as a result of the uranium processing at the site, the DOE considers a large percentage of RCRA hazardous waste at the FEMP to be contaminated with low-level radioactive components. The mixture of hazardous and radioactive waste is termed "mixed waste".

DOE has defined mixed waste as follows:

"Radioactive mixed waste is waste containing both radioactive and hazardous components regulated under the Atomic Energy Act (AEA) and

RCRA, respectively. The term "radioactive component" includes all compounds of an exempted radioactive element.

Any waste containing both a radioactive component, regulated under the AEA, and a hazardous component, regulated by RCRA, is mixed waste; the hazardous component is subject to RCRA regardless of further classification regarding the radioactive component. The radioactive component at the FEMP is subject to DOE regulations.

The EPA clarified its authority to regulate the hazardous component of mixed waste in 51 Federal Register (FR) 24504. The DOE clarified that DOE radioactive byproduct material which contains a hazardous component under RCRA is subject to regulation under both RCRA and the AEA in 52 FR 15937. If the application of both regulatory regimes proves conflicting in specific instances, 52 FR 15940 stipulates that RCRA will yield to the AEA for conflict resolution.

The AEA, together with the Energy Reorganization Act, authorizes DOE to regulate its own radioactive material management operations. DOE carries out its regulatory responsibilities for mixed wastes through DOE Orders, which may provide additional guidelines for the management of mixed wastes in addition to requirements stipulated under RCRA.

DOE Order 5400.3: Hazardous and Radioactive Mixed Waste Program

This guidance specifies that all DOE hazardous and mixed wastes will be managed according to Subtitle C of RCRA and specifies that RCRA applies to the extent it is not inconsistent with the AEA. It also specifies that the radioactive component of the mixed waste is subject to the requirements of DOE Order 5820.2A, and directs the DOE to develop and issue policies, guides, and procedures for implementing the requirements of RCRA at DOE facilities and to integrate them with the requirements of CERCLA and the National Environmental Policy Act (NEPA).

DOE Order 5400.4: CERCLA Requirements

This guidance was written to establish and implement CERCLA policies and procedures as prescribed by the NCP and under the authority of Executive Order 12580, within the framework of the environmental programs

established under DOE 5400.1.

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DOE Order 5820.2A: Radioactive Low-Level Waste Management

DOE Performance Standards. This guidance sets the standards to protect public health and safety and establishes procedures for radioactive low-level waste management.

Waste Characterization, Segregation, Treatment, and Disposal: Each DOE low-level waste generator will separate and characterize non-hazardous and hazardous waste from low-level radioactive waste to facilitate cost effective treatment and disposal.

3.0 WASTE PIT 5 BACKGROUND INFORMATION

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3.1 Unit Description

Waste Pit 5 is a surface impoundment located in the OU-1 area of the FEMP (Figure 2). According to the May 1991 "Soil Investigation Plan for Dike Stability Analysis of Waste Pits 3 and 5 and the Clearwell," Waste Pit 5 is approximately 30 feet deep, and is completely surrounded by an earthen berm. Waste Pit 5's north dike is approximately 800 feet long and 20 feet high. The west dike is approximately 240 feet long and 12 to 15 feet high. Internal slopes are approximately 2.5 : 1, while external slopes are approximately 1.5 : 1. From construction cross section drawings of the Waste Pit 5, the original ground surface prior to the cut and fill construction is estimated to range approximately 12 to 18 feet below the present dike crest (Figures 3 through 6).

Waste Pit 5 was constructed in October 1968 and completely lined with a 60-mil-thick elastomeric membrane consisting of Royal Seal ethylene-diene-propylene monomer (EDPM). The seams were solvent welded. The area covered by the EDPM liner is approximately 173,000 square-feet, including berms.

During the period 1968 to 1983, Waste Pit 5 received high solids-bearing (slurried) waste streams and supernatant from the General Sump of the wastewater treatment system. From 1983 to 1987, Waste Pit 5 received only low solids-bearing wastewater from the General Sump treatment operation, filtrate from the Recovery Plant, or non-radioactive wastes, such as blowdown from the Boiler Plant and Water Treatment Plant.

The surface of Waste Pit 5 is presently open and uncovered, except for a water cap maintained for dust suppression. The effluent tower and access platform equipment remain as the only observable equipment in the pit.

3.2 Waste Characterization and Inventory

According to the January 1991 RI/FS document "Initial Screening of Alternatives for OU-1," Waste Pit 5 currently contains an estimated 98,000 to 105,000 cubic yards of sludge and approximately 750,000 gallons of free liquid over the 161,103 square-foot pit area. The pit contains solids from neutralized raffinate (extraction process residues), slag leach slurry, sump slurry, and lime sludge. Within these materials are an estimated

112,000 pounds of uranium and 37,000 pounds of thorium. The pit was ²²⁹⁶taken out of service in February 1987.

In 1987, Roy F. Weston, Inc. performed a Characterization Investigation Study of the Waste Storage Pits at the FMPC. Data compiled from the study were reported in the January 1991 RI/FS document, "Initial Screening of Alternatives for OU-1". The study included the characterization of the sludge in Waste Pit 5. The sludge was sampled and found to contain uranium, radium and thorium at concentrations which require Pit 5 waste to be considered low level radioactive waste (LLRW). Six borehole samples from Waste Pit 5 were analyzed and were found to be within the regulatory limits for corrosivity, reactivity, ignitability and Extraction Procedure (EP) toxicity for RCRA metals. The samples were also analyzed for Hazardous Substances Listed (HSL) inorganics and HSL organics. No measurable amounts of volatile or semivolatile organics were detected in any of the samples analyzed. Other materials detected to be in Waste Pit 5 include arsenic, cyanide, mercury, and polychlorinated biphenyls (PCBs). It should be noted that PCBs are not regulated by RCRA, but are regulated by the Toxic Substances Control Act (TSCA).

Although Extraction Procedure (EP) Toxicity testing has not shown the waste to be a characteristic hazardous waste as defined under RCRA, Waste Pit 5 has been determined to be a hazardous waste management unit (HWMU) based on process knowledge which indicates that process wastewater was directly discharged to Waste Pit 5 until March 1987. This process knowledge indicates that listed and characteristic hazardous wastes were introduced to Waste Pit 5 from several plant locations including treated process wastewater from the General Sump, and untreated extraction (decladding) process wastewater from the Recovery Plant.

No known releases of hazardous constituents have originated from Waste Pit 5; however, occasional joint failures and tears have been reported during routine inspections, ascribed to weathering effects (Weston 1987). The corrective action for tears observed above the liquids line has been to re-glue the seam and patch the tears. The probability of a release from the unit is unknown, and is currently under investigation through the RI/FS process.

3.3 Topography and Surface Drainage

The USGS 7.5-Minute Topographic Map of Shandon Quadrangle, Ohio, contains the FEMP and surrounding area. The topographic relief of the OU-1 waste storage area is moderate. The original topography has been highly modified by the cut and fill methods used to construct the waste pits (Figures 3 through 6).

Paddy's Run, originating just north of the FEMP, is the main natural drainage channel for the OU-1 area and the western portion of the site. South of the FEMP site, Paddy's Run discharges into the Great Miami River.

3.4 Site Hydrogeology

The FEMP is situated at the confluence of three tributaries of the Great Miami Buried Valley Aquifer. Groundwater flows eastward onto the site from the Dry Fork of the New Haven tributary, and southeastward onto the site from the Shandon Tributary. Groundwater flow across the site is predominantly to the east toward the Great Miami River. A glacial till layer up to 40 feet thick overlies the regional aquifer across much of the FEMP property. This layer contains fluvial and possible lacustrine sediments interbedded with the till. The layer is absent in the channel bed of Paddy's Run where the stream has eroded through the till. Several zones of perched groundwater have been identified within the sand lenses associated with this unit. The depth to water in the upper till unit is highly variable. Hydraulic conductivity in the till layer ranges from $1.3E-3$ cm/sec to $2.5E-6$ cm/sec.

The thickness of the sand and gravel aquifer ranges from a few feet adjacent to the valley walls to a maximum of 200 feet. A 10 to 25 foot clay layer occurs beneath the waste pit and production areas at a depth of approximately 100 to 125 feet below land surface. This layer separates the regional sand and gravel aquifer into upper and lower fractions. The upper sand and gravel aquifer is located below the glacial till to a depth of 125 to 150 feet. The lower sand and gravel aquifer, located below the blue clay wedge, extends to the Upper Ordovician bedrock, located at 200 to 250 feet below the surface at the site. The depth to water within the sand and gravel aquifer varies seasonally but is generally 40 to 45 feet below ground level. The upper aquifer has a hydraulic conductivity of

approximately 450 ft/day; the hydraulic conductivity of the lower aquifer is approximately 600 ft/day. 2296

Under the terms of the Consent Agreement, several wells have been installed into the various geologic strata underlying Waste Pit 5. A Groundwater Monitoring Program, being developed to monitor the groundwater under the OU-1 area, will determine if hazardous wastes or constituents have migrated into any layer of the aquifer system beneath the unit. This Groundwater Monitoring Program will provide data to support the selection of the appropriate Remedial Action Alternative.

4.0 RCRA CLOSURE PERFORMANCE STANDARD

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4.1 RCRA Closure Objectives

The main objective during closure of Waste Pit 5 is to ensure that the unit, and any activities conducted pursuant to closure of the unit, will not pose a threat to human health and the environment. It is FEMP's intent to conduct the remediation and closure activities in accordance with the approved Remedial Action Work Plan for OU-1 (including ARARs).

Remediation of Waste Pit 5 will be conducted in accordance with the RCRA closure performance standards of OAC 3745-66-11 (40 CFR 265.111), summarized as follows:

- 1) Minimize the need for future (post-closure) maintenance;
- 2) Prevent threats to human health and the environment;
- 3) Prevent the post-closure escape of hazardous waste, hazardous constituents, leachate, hazardous runoff, or waste decomposition products to the ground, surface waters, groundwater, or the atmosphere.

4.2 Safety and Health during RCRA Closure Activities

In accordance with requirements of the June 1990 FMPC Site Health and Safety Plan, a Project/Task-Specific Health and Safety Plan(s) will be prepared for work to be performed during remediation and closure of Waste Pit 5. The Project/Task-Specific Plan(s) will identify, evaluate and provide for control of all safety and health hazards identified at the time activities are implemented at the unit. Emergency response for hazardous operations conducted during closure or remediation of the unit is also addressed in Project/Task-Specific Plans. The RI/FS Health and Safety Plan is consistent with the Site Health and Safety Plan.

The June 1990 FMPC Site Health and Safety Plan was designed to be consistent with the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response requirements in 29 CFR 1910.120. Currently the Site Plan is undergoing revision and will be updated as the FEMP Site Health and Safety Plan (Section 12).

5.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS UNDER CERCLA

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During remediation or closure activities at Waste Pit 5, FEMP will comply with all site-specific Applicable or Relevant and Appropriate Requirements (ARARs), including the RCRA closure requirements and performance standards.

Under CERCLA, applicable requirements are those federal and state regulatory requirements that apply to the FEMP. RCRA Subtitle C requirements are applicable to CERCLA response actions if the waste involved is a RCRA hazardous waste, and either the waste was initially treated, stored, or disposed after the effective date of the RCRA requirement, or, the activity at the CERCLA site constitutes treatment, storage or disposal of a RCRA waste.

Relevant and appropriate requirements are those federal and state regulatory requirements that are appropriate to the circumstances of a release or threatened release, so that their use is well suited to the particular site, although not mandated by law.

Potential ARARs, which must be considered in developing the response actions at Waste Pit 5 have been transmitted to the USEPA and copied to the OEPA (ref. letter from DOE to USEPA February 4, 1991 DOE-698-91).

6.0 CERCLA ACTIVITIES AND REQUIREMENTS

The basic CERCLA approach was briefly described in Section 1.2. Section 6.0 is devoted to the description of the various activities that are currently ongoing or planned to meet the intent of the CERCLA provisions.

6.1 Remedial Investigation and Feasibility Study

Pursuant to the terms of the FFCA, the 1990 and 1991 Consent Agreements, and the NCP, the RI/FS serves as a mechanism to characterize the site with respect to contaminants, investigate health impacts, and identify alternatives to be used in site remediation.

The completion of the RI/FS process for each of the operable units is set on a staggered schedule. The order for completion of the studies for the operable units is as follows: OU-2, OU-4, OU-1, OU-3, and OU-5. The RI/FS will include risk assessments to evaluate the risk to human health and the environment from existing conditions and the various Remedial Action Alternatives being conducted.

6.2 Waste Pit Area CERCLA Removal Actions and Studies

During the RI/FS process, it may be determined that interim actions are required to mitigate an immediate threat to human health and the environment. These additional efforts, termed Removal Actions, are undertaken to help eliminate a potential or existing threat, and do not necessarily imply physical removal of any waste. Removal Actions are implemented only after a RSE is performed and it is determined that a Removal Action is necessary. Each Removal Action must meet the CERCLA requirements, including those specific ARARs pertaining to RCRA closure requirements and performance standards.

Current Removal Actions associated with Waste Pit 5 include the ETF Removal Action and the Waste Pit Area Stormwater Runoff Control Removal Action. Future plans for Removal Actions may include the mitigation of fugitive dust emissions from Waste Pit 5 and a Removal Action to address the berm stability of Waste Pit 5. The ETF Removal Action Work Plan is scheduled to be submitted to the USEPA and OEPA in October 1991.

6.2.1 Stormwater Runoff Control Removal Action

The main objective of this project is to reduce the total uranium loading to both the aquifer and the Great Miami River by isolating and mitigating area surface water runoff to Paddy's Run. The Waste Pit Area Stormwater Runoff Control Removal Action is required as part of the 1990 Consent Agreement (as amended in the September 1991 Consent Agreement). This removal action is also designed to comply with the NPDES permit for discharging stormwater runoff into the Great Miami River. This Removal Action is scheduled to be completed in July 1992.

6.2.2 Waste Pit Berm Integrity Study

This study is designed to evaluate berm stability and determine if there has been degradation of the berm integrity. Included, is an evaluation of the Waste Pit 5 berms to the north and west. Survey monuments have been placed on the berms to determine whether movement of the berms is occurring. Also, geotechnical properties of soil borings taken from the berms will be evaluated to predict berm stability. This study is scheduled to be completed in May 1992. If the study indicates that the berms are unstable, a removal action will be justified.

6.3 Treatability Studies

Treatability studies under the RI/FS process are designed to evaluate the effectiveness, technical implementability, feasibility, and risk reduction aspects of the treatment options associated with the Remedial Action Alternatives. In OU-1, the treatment options being investigated to address the waste material in the pits are solidification (cementation), and vitrification (turning the waste material and contaminants into glass). The laboratory portion of the study is scheduled to be completed in the fall of 1992.

A comprehensive Process Development Program Plan to address these treatment options is currently under development. The treatability studies will include laboratory screening to develop technical procedures and formulas, and bench and pilot scale process testing to evaluate the effectiveness of treatment of large waste volumes. The data collected and evaluated in these studies will provide a basis for selection of the appropriate Remedial Action Alternative.

6.4 Remedial Design and Remedial Action

RD/RA activities correspond to the final stages of the CERCLA process toward final remediation at a site. These activities include preparation of the final design, plans, and procedures required for final closure of a unit and to meet the cleanup levels and other ARARs defined in the ROD. The RD/RA Work Plan is required to be submitted within 60 days after the ROD is final. For sites listed in the NPL, actual remediation must then begin within 15 months of the issuance of the ROD.

6.5 Best Management Practices

The 1988 Consent Decree requires implementation of Best Management Practices (BMPs) to help control discharges of industrial and other wastes from the FEMP. Examples of discharges to be addressed by BMP plans are spills and leaks, drainage from material storage areas, plant site runoff, and sludge and waste disposal discharges. Because effluent guidelines are not always available, BMP plans are designed to be a supplemental control to help minimize harmful discharges and protect water quality, human health, and the environment.

7.0 INTEGRATED RCRA/CERCLA REMEDIATION

The basis for an integrated approach that satisfies both RCRA and CERCLA regulations for Waste Pit 5 was described in Section 1.3. Besides satisfying overlapping regulations, the integration of RCRA closure requirements with CERCLA remediation will allow consideration of alternative closure methodologies, evaluation of the proposed alternatives for cost effectiveness and full scale implementability, and allow full community participation in the process. RCRA requirements for Waste Pit 5 will be addressed as ARARs in the ROD. Closure of the unit will be completed under the final RD/RA Work Plan.

At NPL sites, a variety of alternatives for remediation will typically be addressed, often involving an alternative treatment technology in combination with containment systems and institutional controls for remediation of the waste residuals. The Remedial Action Alternatives discussed below are options being considered, and do not necessarily represent decided courses of action. The selection of the final Remedial Action Alternative for Waste Pit 5 will be presented in the ROD for Operable Unit 1.

Hazardous waste in Waste Pit 5, and any residues from treatment of wastes from the unit may be managed in several ways. One approach involving removal is to remove the waste from the unit, and dispose of the waste and residues at an approved off-site facility. A variation of this approach is to remove and treat the waste, and dispose of the waste and/or treatment residue in a new on-site land disposal unit. The new unit would meet the minimum technology requirements of OAC 3745-54 through 57 (40 CFR 264 and 10 CFR 61), and the land disposal restrictions in OAC 3745-59 (40 CFR 268).

A second approach allows waste to be treated in-situ, or within the boundary of the land-based unit, and the residuals to remain, or be consolidated within the area from which they originated. Since the wastes would not be removed from the unit boundary, the Land Disposal Restrictions (LDRs) would not be triggered. The unit would then be capped and monitored in accordance with the requirements for closure of a land disposal unit with waste left in place (OAC 3745-68-10; 40 CFR 265.310).

A third approach requires no further management of waste or treatment residue if the waste in the unit can be evaluated and determined to be non-hazardous, or delisted. If this approach is selected, a petition for delisting would include the use of a predictive model to show that hazardous waste or constituents would not migrate from the unit, or would not pose a threat to human health and the environment.

7.1 Remedial Action Alternatives

The Remedial Action Alternatives for pit wastes and contaminated media include access or use restrictions, containment by barriers or capping, extraction, physical and chemical treatment, solidification and stabilization techniques, and landfilling. The January 1991 RI/FS Report, "Initial Screening of Alternatives for Operable Unit 1," has been reviewed and approved by both the USEPA and the OEPA. This report outlines the basic remedial action approaches for OU-1 and subdivides the alternatives into seven proposed remedial actions. The Remedial Action Alternatives included in the report for Waste Pit 5 are as follows:

Alternative 0: No Action

Alternative 1: Nonremoval, slurry wall, and cap

Alternative 2: Nonremoval, physical stabilization, slurry wall, and cap

Alternative 3: Nonremoval, vitrification, and cap

Alternative 4: Removal, waste treatment, and on-property disposal

Alternative 5: Removal, waste treatment, and off-site disposal

Alternative 6: Removal, waste treatment, on-property disposal, and cap

Alternative 7: Removal, waste treatment, on-property disposal, soil treatment and cap

The following is a discussion of various aspects of the management options being considered as alternatives for Waste Pit 5 closure. Alternative 0 (No Action) is included in the analysis of alternatives only for baseline reference purposes. At this point, Alternatives 1 and 3 have been removed from further consideration.

No Action

The no-action response involves leaving waste in the unit without going through any steps toward remediation. The no-action response does not

provide additional remediation, monitoring, or security activities at the site to further minimize risk to public health or the environment. The no-action response will not be a RCRA Remedial Action Alternative, but is included as a baseline for comparison with other remedial alternatives developed under CERCLA.

Institutional Controls

This response action methodology includes access/use restrictions, land acquisition, and deed restrictions. It involves minimizing access to and use of the unit or the area of concern. Deed restrictions and land acquisition will not be retained as a stand-alone remediation alternative because surface water runoff, groundwater flow, and fugitive dust emissions could travel beyond the site boundary.

Containment

One method of reducing the risk associated with the unit is by reducing the mobility of the waste. To reduce waste mobility, the waste must be contained or separated from the primary transport pathways, which include groundwater, surface-water run-on and runoff, wind-blown fugitive dust, soils and sediments, and biological and mechanical transport mechanisms. Major control and containment remedial actions being evaluated for these pathways and media include run-on/runoff controls, capping, subsurface flow control, and the use of containment structures. The capping alternatives include a concrete, asphalt or soil-based cover, a chemical sealant, and a multimedia cap. Containment structures are designed to control subsurface groundwater flow, while the cap reduces or prevents infiltration of precipitation into the waste.

These alternatives can be further divided into two types of groundwater control: (1) subsurface barriers and (2) hydraulic control methods. Subsurface barriers include slurry walls and grout curtains used to block or redirect groundwater flow by vertical barriers of low permeability. Subsurface flow can also be controlled hydraulically by removing or redirecting groundwater through a series of subsurface drains or wells. The alternatives available for flow control include groundwater extraction wells, slurry walls, grout curtains, subsurface drains, and groundwater

recharge and discharge areas.

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Removal

There are many alternatives available for mechanical removal of soils, sediments, and pit wastes. These include using a combination of the following equipment: loader/bulldozer, crane with clamshell, conveyor system, backhoe, and dragline.

Other removal alternatives include a hydraulic system and a pneumatic removal system. A hydraulic system uses a jetting ring with cutterhead. The pneumatic removal process alternative uses a vacuum with a cutter head assembly. Groundwater removal alternatives include a groundwater extraction well system and subsurface drains.

Treatment

The technologies and process alternatives retained for the treatment of the soils, sediments, and pit wastes are stabilization/solidification, vitrification, and surcharging. Water treatment technologies may also be used in combination with these process alternatives or as ancillary treatment to these alternatives.

Waste stabilization includes cement or silicon based stabilization and vitrification. Cement/silicon stabilization is a proven and available technology. Vitrification is a relatively new process for large scale applications; however, it offers treatment with subsequent low leachability.

Other treatment alternatives include physical, chemical, thermal, and biological treatment. Physical treatment includes waste segregation/separation, reverse osmosis, and selective ion removal. Chemical treatment includes leaching/extraction, neutralization, and precipitation. Thermal treatment (thermal separation) is used to treat soils and sludges that are contaminated by organics. Biological treatment (bio-remediation) includes in-situ bio-treatment and on-site bio-reactor treatment. Surface water, storm water runoff and perched groundwater may also be treated by using one of these alternatives.

On-Site Disposal

An on-site landfill, defined as an Engineered Waste Management Facility (EWMF), can be designed to meet the established federal and state regulations and provide an alternative to off-site disposal. This landfill would meet the 40 CFR 264.310 minimum technology requirements, and be designed to prohibit contaminant movement or migration in order to minimize the threat to human health and the environment.

Off-Site Disposal

Off-site disposal alternatives for mixed waste are currently non-existent. Off-site disposal, once capacity becomes available, will be considered for final remediation, whether it is applied to untreated waste or to the treated wastes removed from the unit.

7.2 Analysis of Remedial Action Alternatives

The criteria for remedy selection under Section 121 of CERCLA requires that viable remedial alternatives must generally: (1) Be protective of human health and the environment, (2) comply with applicable or relevant and appropriate requirements (ARARs), (3) be effective in reducing risk from residuals, (4) be cost effective, and (5) use permanent solutions and alternative treatment technologies to the maximum extent practicable.

The 1990 and 1991 Consent Agreements, the NCP, and the FFCA require the DOE to comply with all RCRA ARARs. Since RCRA LDRs are applicable requirements, they must be addressed in the closure of Waste Pit 5. The RCRA LDRs prohibit, with certain exceptions, the land disposal of hazardous wastes, unless the wastes are first treated to established standards. Exceptions to these standards may be available if the wastes are disposed in units satisfying the statutory "no migration" criteria, or if a "capacity extension" has been given for the wastes. For wastes potentially subject to the LDRs, only two alternatives will generally be available: treatment to best demonstrated available technology (BDAT) standards, or containment (including containment of waste treated in-situ).

7.3 Selection of Remediation Methodology

The Remedial Action Alternative selection process to determine the final

remedial design will follow the CERCLA risk-based approach. Using this approach, risk is calculated by determining the level of threat that the various Remedial Action Alternatives, if implemented, would pose on human health and the environment. Selection of the final remedy will consider these risk levels in determining the alternative that is most protective of human health and the environment and meets the other selection criteria as well.

The official Record of Decision (ROD) will contain the final alternative selected. The Proposed Draft ROD for Operable Unit 1 is scheduled to be submitted to the OEPA and USEPA in December 1994. Once the ROD is approved, the RD/RA Work Plan will be submitted for approval. The RD/RA Work Plan will describe how the selected Remedial Action Alternative and the ARARs (including decontamination) will be implemented to enable RCRA closure of the Waste Pit 5 under both the RCRA and CERCLA programs, and final remediation of the OU-1 area.

8.0 DISPOSAL/DECONTAMINATION OF EQUIPMENT, STRUCTURES AND SOILS 2296

During remediation of Waste Pit 5, the main RCRA objective during disposal and decontamination activities is to ensure that remedial action activities will not pose a threat to human health and the environment. The disposal and decontamination activities associated with the remediation of Waste Pit 5 will be conducted in accordance with the RCRA closure performance standards in OAC 3745-66-11 (40 CFR 265.111) and with other ARARs identified in conjunction with the Remedial Action Work Plan. All sampling and analysis conducted pursuant to decontamination (or other remedial action activities) will be in accordance with the Sampling and Analysis Plan (Section 11.0).

CERCLA decontamination standards and procedural development will be ancillary to the remedial action alternative selected. Once the Remedial Action Work Plan for OU-1 is approved, the RAS/CPI for Waste Pit 5 will be updated to provide specific details of the decontamination process including target decontamination levels for structures and equipment to be decontaminated.

8.1 Equipment Decontamination

Depending on the remedial action alternative selected, there are several equipment decontamination methods that may be used. The method selected and the setup for equipment decontamination will be designed to contain and minimize the waste generated, and minimize the potential for release of hazardous wastes and constituents to the environment.

All equipment involved in the closure of Waste Pit 5 will be decontaminated, or sampled (using approved sampling procedures) to verify that the equipment is not contaminated. Any equipment determined to be contaminated will be decontaminated on-site using approved decontamination procedures, or managed as a hazardous waste. After decontamination, the equipment will be resampled to verify that the decontamination process was successful.

8.2 Decontamination of Structures

Examples of structures at Waste Pit 5 that may require decontamination

during remediation include drainage systems that are a part of the surface impoundments, sampling platforms, the effluent tower, piping, pumps, valves, and other appurtenant structures.

All structures within the scope of this RAS/CPI for Waste Pit 5 will be decontaminated, or sampled to verify that the structure is not contaminated. Any structure determined to be contaminated will be decontaminated on-site using approved decontamination procedures, or managed as a hazardous waste. After the decontamination process, the structure will be resampled to verify that the decontamination process was successful.

9.0 SCHEDULE FOR CLOSURE/RESPONSE ACTION AT UNIT

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9.1 Integrated RCRA/CERCLA Schedule

Remedial activities pursuant to the alternative selected for final closure of Waste Pit 5 can be initiated once the CERCLA ROD is reached and the remedial design is complete. The CERCLA process for remediation of the OU-1 area is currently in the RI/FS stage. Projected completion dates for interim CERCLA activities that involve Waste Pit 5 are as follows:

ETF Removal Action Work Plan - 10/91

Work Plan for the Control of Exposed Material in Pit 5 - 3/92

OU-1 RI Report/Baseline Risk Assessment - 10/93

OU-1 FS Report/Comprehensive Response Action Risk Evaluation - 3/94

OU-1 Proposed Draft ROD - 12/94

Approval of ROD - to be determined

Once the ROD is approved, a specific schedule for remedial action activities related to Waste Pit 5 will be included in the draft RD/RA Work Plan for OU-1. Once the Remedial Action Work Plan is approved, a remediation schedule for remediation of Waste Pit 5, consistent with planned Response Actions, will be submitted to the OEPA for approval. Throughout the RI/FS process, and until remediation of Waste Pit 5 is completed, the FEMP will comply with RCRA ARARs for the unit, including routine inspection and maintenance activities.

9.2 Extension for Closure Time

Since it is necessary to complete the RI/FS and prepare the ROD before closure of Waste Pit 5 can begin, and due to the complex nature of a RCRA closure integrated with CERCLA response actions, it is almost certain that final closure will exceed the time allowed by the regulations for closure of the unit. Once the CERCLA schedules for remedial activities in the OU-1 area are determined, the FEMP will request an extension of time allowed for closure from the OEPA to complete the tasks outlined in this RAS/CPI. This time extension for RCRA closure will not exceed the time required to complete the remedial activities under the CERCLA program.

10.0 CONTINGENT POST-CLOSURE PLAN

It is FEMP's intent to complete RCRA closure and post-closure activities pursuant to OAC 3745-66-10 through 20 (40 CFR 265 Subpart G), and if necessary, OAC 3745-68-10 (40 CFR 265.310), in conjunction with the CERCLA response activities at Waste Pit 5. Any post-closure activities such as maintenance activities at the unit after final remediation will be integrated with the Remedial Action Alternative selected by the CERCLA evaluation process and documented in the ROD.

11.0 SAMPLING AND ANALYSIS PLAN

A site-wide Sampling and Analysis Plan (SAP) is included as part of the RI/FS Work Plan. This site-wide Sampling and Analysis Plan may require modifications as a result of the changes in the revised Quality Assurance Project Plan. Since it is currently undergoing revision, the site-wide Sampling and Analysis Plan is not included as part of this submittal.

A project-specific Sampling and Analysis Plan for the waste pit area is required to be developed under the RI/FS to support the CERCLA remedial activities. As the specific activities are identified and scheduled, modifications to the approved project-specific SAP for the waste pit area will be submitted under separate cover for review and approval as required.

12.0 HEALTH AND SAFETY PLAN

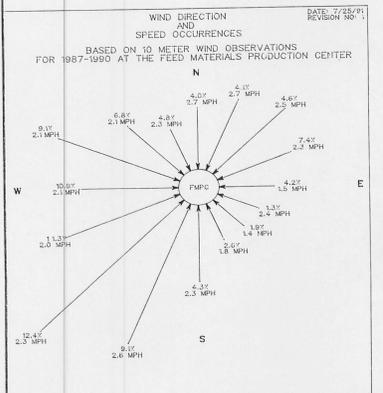
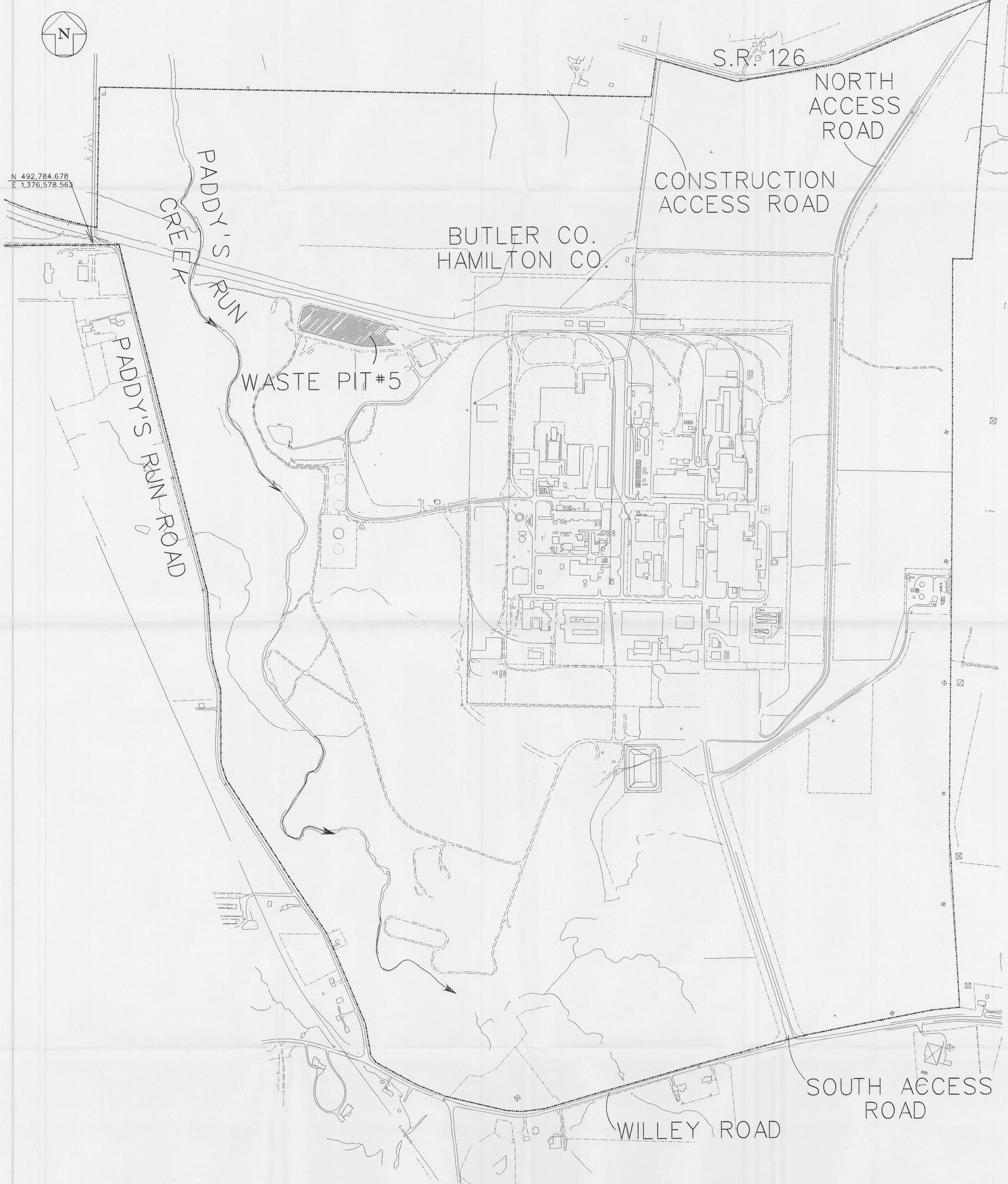
2296

Since the Site Health and Safety Plan is currently undergoing revision, it is not included as part of this submittal. When the FEMP Site Health and Safety Plan is available, a copy will be provided for review. As the specific activities are identified, Project/Task-Specific Health and Safety Plans will be provided under separate cover for review.

13.0 QUALITY ASSURANCE PLAN

2296

The FEMP site-wide Quality Assurance Project Plan (QAPjP) will be followed in the development of the Removal Action Work Plan. This draft QAPjP is currently undergoing review to incorporate all sampling and analytical activities at the site. Once this plan is approved, all sampling and analytical activities during closure or final remediation at the unit will be performed in accordance with the plan. The final QAPjP is scheduled to be submitted to the USEPA and OEPA in the near future, and therefore, is not available for inclusion within this work plan.



PRELIMINARY

U.S. DEPARTMENT OF ENERGY	WASTE PIT 5	2296
FIGURE 1	FEMP SITE PLAN	
FERNALD, OHIO	CLOSURE PLAN / RESPONSE ACTION	
	SCALE: 1" = 300'	38
	107842_7	

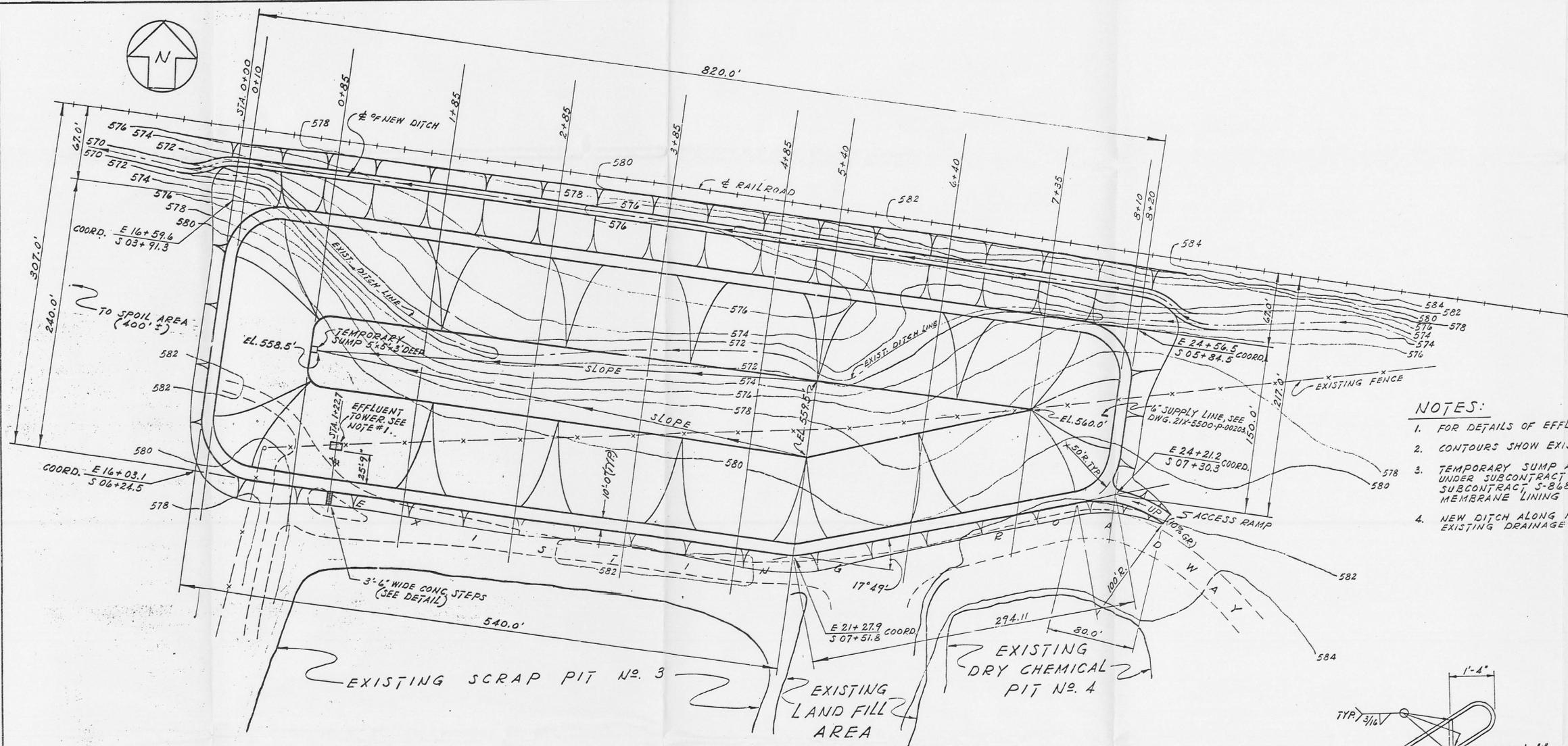


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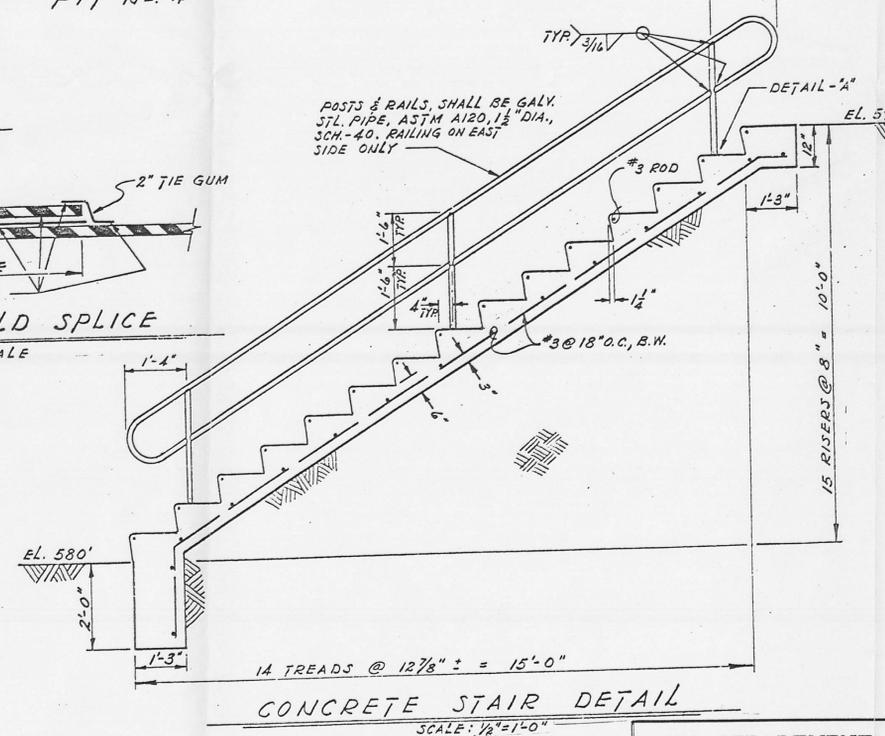
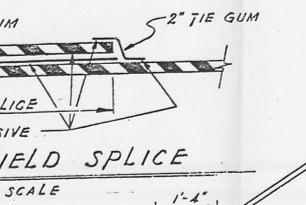
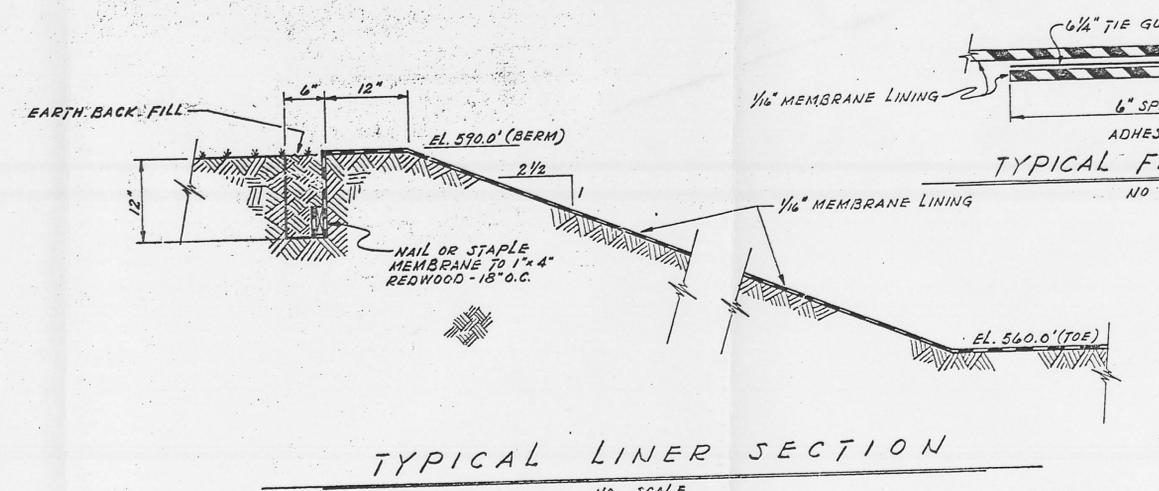
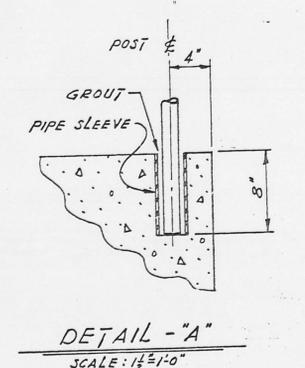
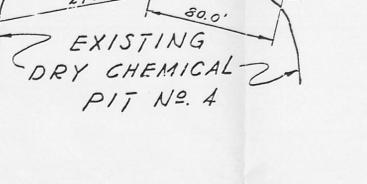
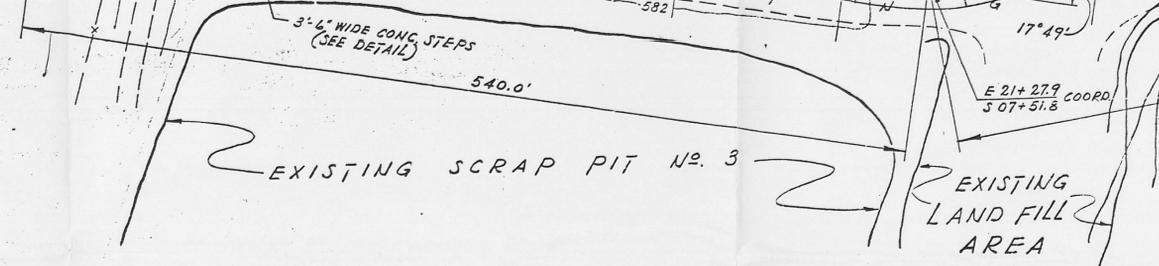


- LEGEND**
- BENCH MARKS
 - POST INDICATOR VALVE (P.I.V.)
 - ⊙ FIRE HYDRANT (F.H.)
 - ⊙ MANHOLE (MH)
 - ⊙ CATCH BASIN (CB)
 - ⊙ LIGHT POLE
 - ⊙ PIPE SUPPORT
 - ⊙ ELECTRICAL MANHOLE
 - ⊙ TELEPHONE MANHOLE
 - ⊙ STREET WASHERS
 - ⊙ VALVE BOX
 - ⊙ TREES

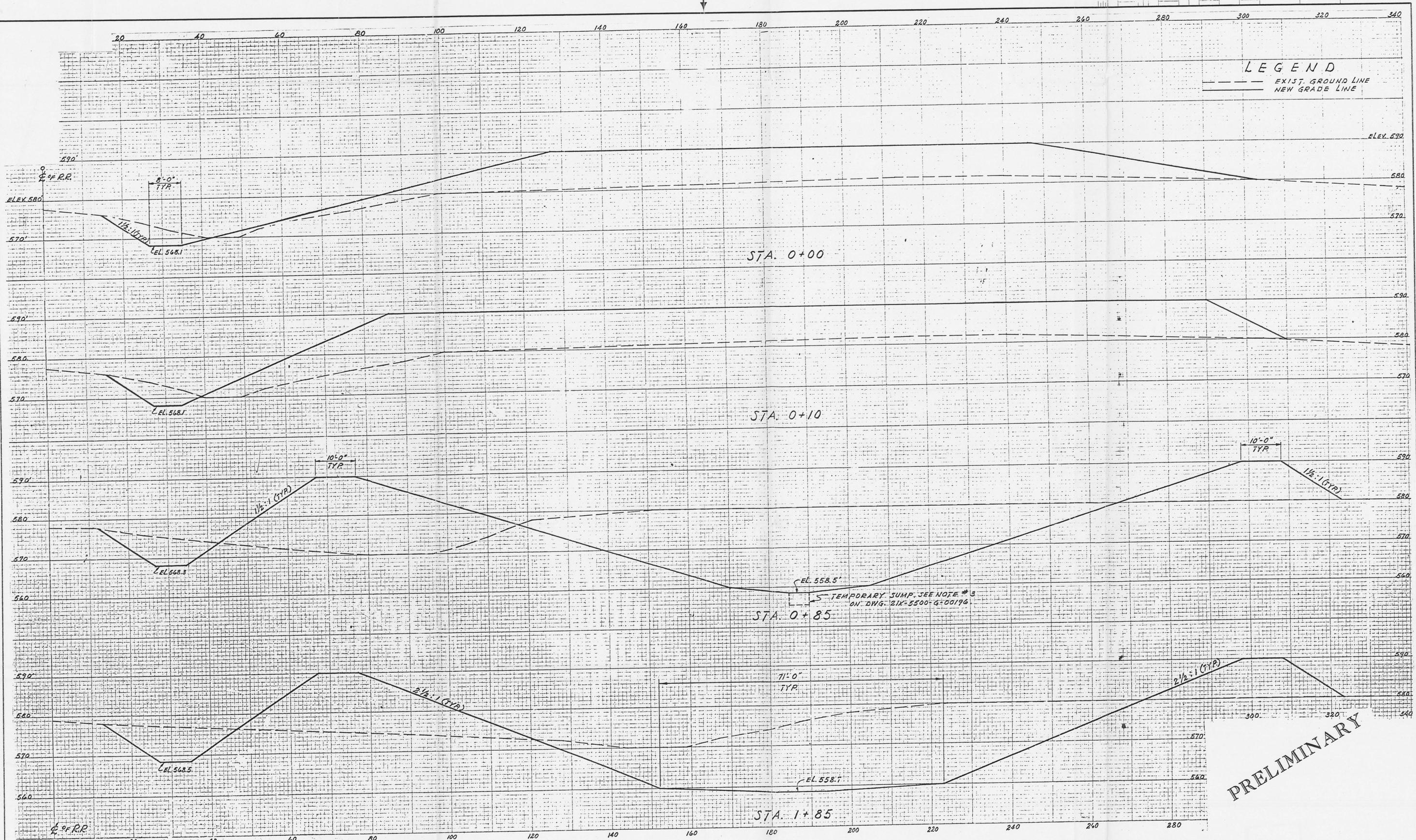
U.S. DEPARTMENT OF ENERGY FERNALD, OHIO	WASTE PIT 5 CLOSURE PLAN / RESPONSE ACTION EXISTING SITE PLAN SCALE: 1"=100' 107842_2	2296 39
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- NOTES:**
1. FOR DETAILS OF EFFLUENT TOWER SEE DWG. 21X-5500-S-00200.
 2. CONTOURS SHOW EXISTING GROUND ELEVATIONS.
 3. TEMPORARY SUMP AT WEST END OF PIT SHALL BE BUILT UNDER SUBCONTRACT S-867 & SHALL BE FILLED UNDER SUBCONTRACT S-868 IMMEDIATELY BEFORE PLACING MEMBRANE LINING IN THIS AREA.
 4. NEW DITCH ALONG NORTH SIDE OF PIT SHALL BLEND INTO EXISTING DRAINAGE AT EAST & WEST ENDS.



PRELIMINARY



LEGEND
 --- EXIST. GROUND LINE
 ——— NEW GRADE LINE

PRELIMINARY

U.S. DEPARTMENT OF ENERGY

FIGURE 4

FERNALD, OHIO

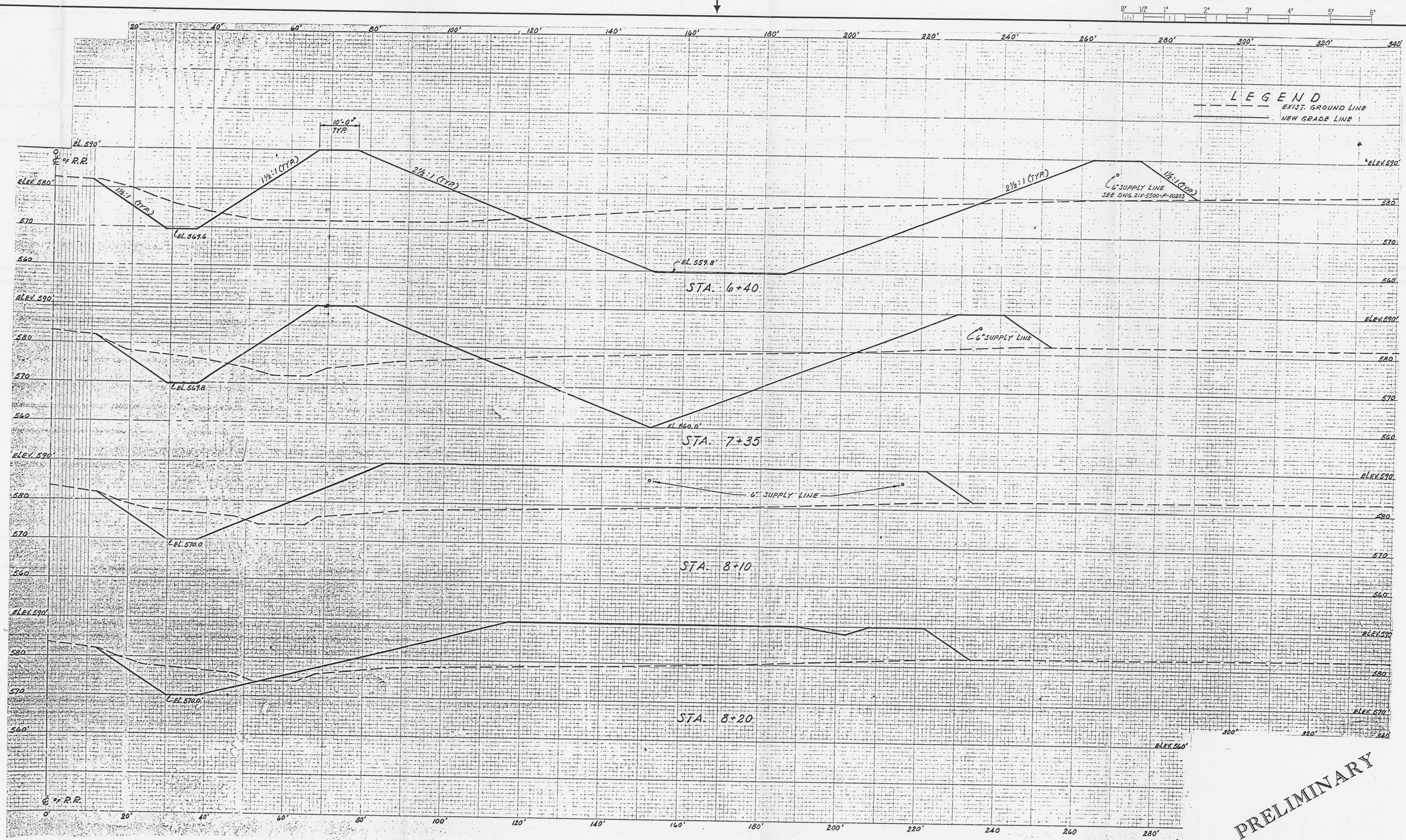
SCRAP PIT AREA CROSS SECTIONS
 WASTE PIT 5 2296₃

CLOSURE PLAN / RESPONSE ACTION

SCALE: 1" = 10'
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PRELIMINARY

U.S. DEPARTMENT OF ENERGY

FIGURE 6

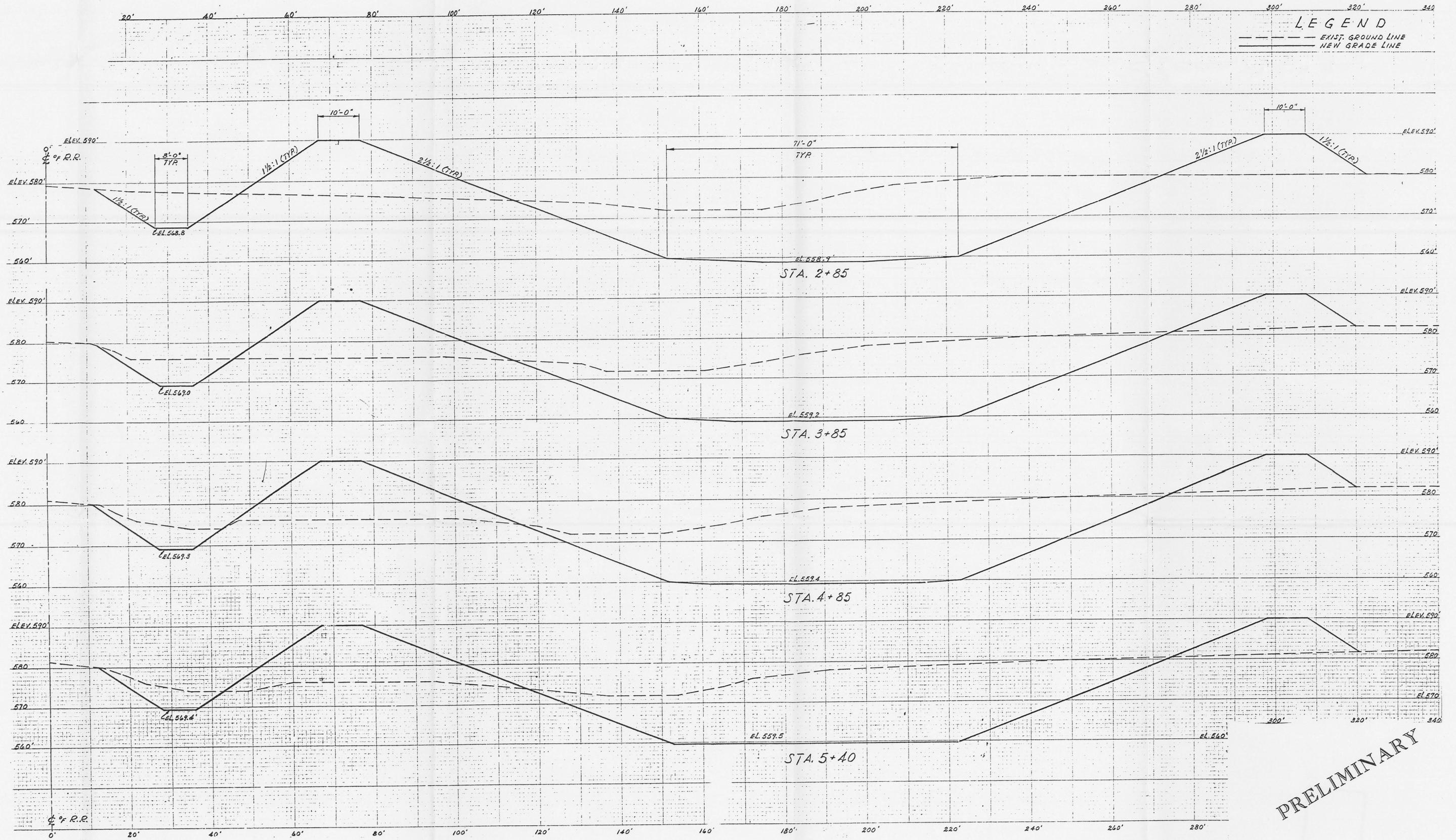
FERNALD, OHIO



SCRAP PIT AREA CROSS SECTIONS

WASTE PIT 5
CLOSURE PLAN / RESPONSE ACTION

SCALE: 1" = 10' 43



U.S. DEPARTMENT OF ENERGY	SCRAP PIT AREA	CROSS SECTIONS
FIGURE 5	WASTE PIT 5	2296
FERNALD, OHIO	CLOSURE PLAN / RESPONSE ACTION	42
	SCALE: 1" = 10'	10785-6