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**CONSOLIDATED CONSENT AGREEMENT/
FEDERAL FACILITY COMPLIANCE
AGREEMENT/FEDERAL FACILITY AGREEMENT
MONTHLY PROGRESS REPORT PERIOD ENDING
APRIL 30, 1992**

04/30/92

**DOE-FN/EPA
100
REPORT**

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Introduction

The Consent Agreement (CA) As Amended under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 120 and 106(a), the Federal Facility Compliance Agreement (FFCA), and the Federal Facility Agreement (FFA) between the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (U.S. EPA) signed September 20, 1991, July 18, 1986, and November 19, 1991, respectively, require that monthly reports be submitted to the U.S. EPA regarding progress made to meet the provisions of those agreements. This report fulfills those requirements by describing actions undertaken at the Fernald Environmental Management Project (FEMP) during the period April 1 through April 30, 1992 and planned actions for the period May 1 through May 31, 1992.

Highlights of activities in April include the following:

- Bids for the IAWWT Unit at the Bionitrification-Effluent Treatment System (IAWWT-BDN/ETS) were received on April 16, 1992. A construction Work Order (CWO) was subsequently issued on April 16 and the contract was awarded on the same day with a predicted start date of May 4, 1992. The construction manager has been authorized to proceed with early procurement for long-lead items in order to meet the commitment date of July 30, 1992.
- The IAWWT(Stormwater Retention Basin) underground sprinkler system piping is complete. The system was tested, passed inspection, and was backfilled.
- The Draft Removal Action No. 3 Groundwater Modeling Report which justifies the relocation of the Part 2 well field was submitted to the U.S. and Ohio EPAs on April 17, 1992.
- U.S. and Ohio EPA approval of the Removal Action No. 4 Bentonite Effectiveness Monitoring Plan was received on April 24, 1992.
- The K-65 Emergency Power Supply System was installed. This will be used to support the monitoring functions of the K-65 area.
- Resolution of the U.S. and Ohio EPAs' comments to the Active Flyash Pile Controls Removal Action (No. 10) Work Plan were made. The revised version of the Work Plan was transmitted to the EPAs on April 29, 1992.

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Introduction (continued)

- Removal Action No. 11, Pit 5 Experimental Treatment Facility (ETF), was completed. The removal of the contents, structure, and filter material for the Experimental Treatment Facility was completed 22 days ahead of schedule. Demobilization of the ETF Project has been completed. It has been backfilled and capped, using a clay cover.
- The revised Work Plan for Removal Action No. 15, Scrap Metal Piles, was resubmitted to the U.S. EPA on April 3, 1992.
- The Removal Action No. 18, Control Exposed Material in Pit 5, Work Plan was submitted to the U.S. and Ohio EPA.
- Operable Unit 2 permeability testing related to the treatability study was completed during April. All TCLP results have been received and validated during this reporting period.
- Operable Unit 4's Vitrification Treatability Study Work Plan was approved with comments. The determination of the physical properties for the K-65 residue and the metal oxide material was completed. The chemical analyses for the K-65 residue and the metal oxide material were also completed. The radon emanation from the untreated K-65 residue was also measured, completing the laboratory screening tests.

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WORK ASSIGNMENTS AND PROGRESS

Descriptions of work progress are presented in the following sections and/or enclosures to this report:

- o CA Section IX - Removal Actions.
- o CA Section X - Remedial Investigation/Feasibility Study.
- o Enclosure A - Wastewater Flows and Radionuclide Concentrations under CA Section XXIII.B.
- o Enclosure B - FFCA: Initial Remedial Measures and Other Open Actions.
- o Enclosure C - FFA: Control and Abatement of Radon-222 Emissions.
- o Enclosure D - Drilling/Boring Logs.

CA Section IX. Removal Actions

This section provides an update of activities associated with the implementation of Removal Actions (RAs) at the FEMP during April 1992. Information is presented for each of the Removal Actions identified in the Consent Agreement As Amended.

Phase I Removal Actions

- o RA No. 1, Contaminated Water Under FEMP Buildings.
- o RA No. 2, Waste Pit Area Run-off Control.
- o RA No. 3, South Groundwater Contamination Plume.
- o RA No. 4, Silos 1 and 2.
- o RA No. 5, Decant Sump Tank.
- o RA No. 6, Waste Pit 6 Residues.
- o RA No. 7, Plant 1 Pad Continuing Release.

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CA Section IX. Removal Actions (continued)

Phase II Removal Actions

- o RA No. 8, Inactive Flyash Pile Control.
- o RA No. 9, Removal of Waste Inventories.
- o RA No. 10, Active Flyash Pile Controls.
- o RA No. 11, Pit 5 Experimental Treatment Facility.
- o RA No. 12, Safe Shutdown.
- o RA No. 13, Plant 1 Ore Silos.
- o RA No. 14, Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator.
- o RA No. 15, Scrap Metal Piles.
- o RA No. 16, Collect Uncontrolled Production Area Runoff--Northeast.
- o RA No. 17, Improved Storage of Soil and Debris.
- o RA No. 18, Control Exposed Material in Pit 5.

Phase III Removal Actions

- o RA No. 19, Plant 7 Dismantling.
- o RA No. 20, Stabilization of UNH Inventories.
- o RA No. 21, Expedited Silo 3.
- o RA No. 22, Waste Pit Area Containment Improvement.
- o RA No. 23, Inactive Flyash Pile.
- o RA No. 24, Pilot Plant Sump.

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CA Section IX. Removal Actions (continued)

- o RA No. 25, Nitric Acid Tank Car and Area.
- o RA No. 26, Asbestos Removals (Asbestos Program).
- o RA No. 27, Management of Contaminated Structures at the FEMP.

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RA No. 1, Contaminated Water Under FEMP Buildings

Plant 6 - Pumping and collection of the perched water from underneath Plant 6 began on May 31, 1991. Through April 1992, approximately 20,300 gallons of perched groundwater have been collected and transported for treatment by the Plant 8 VOC treatment system.

Plants 2/3 and Plant 8 - The Plants 2/3 and Plant 8 extraction systems became operational on October 23, 1991. Through April 1992, approximately 65,600 gallons of perched water have been collected for treatment from Plant 2/3 and approximately 43,000 gallons of perched water have been collected for treatment from Plant 8. Planning was started to install direct piping to the Plant 8 treatment system from the Plant 2/3 wells.

Plant 9 - Pumping from Plant 9 began on August 20, 1991. Approximately 16,700 gallons of Plant 9 perched water have been extracted and collected through April 1992.

Plant 8 - The startup date for the Plant 8 treatment system was July 24, 1991. Through April 1992, approximately 141,400 gallons of groundwater have been transported and treated utilizing the Plant 8 system.

All activities to support the deliverables identified in the three U.S. EPA approved Removal Action Work Plans have been completed. Pumping of perched water beneath the four plants will continue in accordance with the Work Plan provisions.

RA No. 2, Waste Pit Area Runoff Control

The Work Plan for the Waste Pit Area Runoff Control Removal Action was approved with modifications by the U.S. EPA on January 10, 1991. Conditional approval was received from the Ohio EPA on April 2, 1991.

Construction activities have been ongoing since June 6, 1991. Six of the eight construction sequences for the Waste Pit Area Runoff Control Removal Action have been completed. This Removal Action is 80% complete.

The stock piles of excavated soil from the sump have been characterized within the 30 days as stated in the revised Sampling and Analysis Plan.

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RA No. 2, Waste Plt Area Runoff Control (continued)

Activities in April include backfilling around the sump, installing the generator, completing the trench work south of sump, and erecting the guardrail around the sump.

Planned activities for May include piping and pump installation, completion of trench work north of the sump, bentomat placement at north and east detention areas, and substantial completion and testing of pumps.

| KEY MILESTONES | STATUS | DUE DATE |
|----------------------------|-------------------|-----------------|
| Completion of construction | Open, on schedule | July 31, 1992 |

RA No. 3, South Groundwater Contamination Plume

Part 1

The Work Plan for Part 1, Alternate Water Supply for two industrial users was approved by the U.S. EPA on January 3, 1991. A summary of the most recent and ongoing activities for Part 1 are listed below:

A meeting was held on April 6, 1992, with the Department of Energy Headquarters (DOE-HQ), DOE-Fernald Field Office (DOE-FN), DOE-Oak Ridge Field Office (DOE-ORFO), Westinghouse Environmental Management Company of Ohio (WEMCO), the Corps of Engineers (COE), Ohio Environmental Protection Agency (Ohio EPA) and the U.S. Environmental Protection Agency (U.S. EPA) to discuss the status of the South Groundwater Contamination Plume Removal Action. DOE-ORFO and COE assisted in the explanation of the property acquisition process and the current difficulties associated with property acquisition for the Removal Action.

A letter was issued to the U.S. EPA on April 24, 1992, to request a schedule extension for South Groundwater Contamination Plume Removal Action, Part 1, due to property acquisition delays. Acquisition by the government condemnation process is currently proceeding for four tracts owned by Rowe & Rowe Trustees (two tracts), Frank K. Lienesch and Unknown Owners. The letter did not include a proposed revised milestone date since the completion date of the condemnation process cannot be established at this time. Notification will follow once the completion date has been determined.

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RA No. 3, South Groundwater Contamination Plume (continued)

Part 1 (continued)

- The WEMCO Operable Unit 5 Manager and COE representative met with the Rowe Brothers (Mandery Trust) and their lawyer. The meeting was held to discuss technical concerns raised by the property owners over the easement agreement. Key items raised were water rights, preference for the DOE to purchase the well field outright rather than through easement, concern that easement language is too general, and the right for the DOE to give easement rights to its designee.
- Draft responses to the U.S. EPA and Ohio EPA comments on Part 1 Work Plan were prepared. The responses will be submitted to the U.S. EPA and Ohio EPA, along with a revised Soil Sampling and Analysis Plan, in early May.
- Several meetings were held to discuss what options are available to begin limited construction on the properties where access has been obtained. Several possibilities were presented and pursued. Based on an analysis of these alternatives, WEMCO forwarded a request to DOE-FN on April 30, 1992 seeking their concurrence to begin construction on a limited basis on Part 1. If approved, work would begin at the Albright and Wilson facility and proceed north on the three contiguous properties where construction access has already been obtained. This option will allow for construction to be completed on the CSX Realty property prior to the currently scheduled construction access agreement expiration date. It is hoped that the access to the remaining properties would be received prior to completion of construction on this initial three-property section.
- DOE-HQ is continuing their review of the condemnation packages for Part 1.
- Draft appendices for the Part 2 Well Field Operations and Maintenance Manual were issued for review.

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Part 2

To expedite the Part 2 construction, this project was divided into four construction bid packages. These include: 2A - Groundwater discharge pipeline (pressure flow) and outfall pipeline (gravity flow) from south of Willey Road to and including Manhole 182B, 2B - Manhole 182B to Great Miami River and aeration facility, 2C - Recovery well field, and 2D - Test well installation and pump test. Part 2 follow-on activities include:

- Issued Construction Work Order (CWO) on April 10, 1992 for Construction Package 2A. The CWO allows RUST to begin discussions with the selected contractor. However, the Notice to Proceed on construction is being held up pending acquisition of easements or access for construction agreement.

- WEMCO prepared and issued a preliminary drawing and additional information which specified key design criteria to be used for the design of the well field. The package indicated a five-well recovery system moved slightly southeast from the original location. This slight relocation will require only one well and only minimum branch roadway and pipeline to be installed on the Delta Steel property; a property which is expected to be held up in the easement acquisition process.

- Several meetings were held to discuss what options are available to begin limited construction on Part 2A. Several possibilities were discussed and are being pursued.

- A joint meeting was held between DOE, WEMCO, Parsons, and A. M. Kinney personnel concerning the layout of the Part 2C well field and Part 2D test well. The location of the five extraction wells, the test well and related monitoring wells was set. The test well location will be changed from the Center Well Number 2, located on Delta Steel property, to Well Number 3, located on the Weber property. A general agreement was reached regarding the location of the well field monitoring wells. Several monitoring wells and access roadways were relocated to minimize access requirements. Parsons will evaluate the proposed changes.

- On April 28, 1992, DOE-FN, the Corps of Engineers, DOE-ORFO Realty, and the WEMCO OU5 Manager met to discuss access with the property owner for Part 2A construction. This was followed by a meeting with the property owner. Further action is on hold pending appraisal of the property.

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RA No. 3, South Groundwater Contamination Plume (continued)

Part 2 (continued)

- Draft responses to the U.S. EPA and Ohio EPA comments on Part 2/3 Work Plan were prepared. Comment responses will be submitted to the U.S. EPA and Ohio EPA, along with a revised Soil Sampling and Analysis Plan, in early May.
- Revised drawings were prepared for the outfall line. The outfall line was adjusted slightly to keep the line within the existing easement and at the same time provide adequate clearance with Cincinnati Gas and Electric Company's field confirmation of the gas line location.

Part 3

The Work Plan for Part 3 (the installation and operation of an IAWWT System to reduce uranium contaminant loading discharged to the Great Miami River to a level less than 1,700 pounds per year) was prepared as one work plan with Part 2. Due to the relocation of the Part 2 well field to an area having a higher concentration of uranium, the IAWWT system capacity was expanded in order to maintain the 1,700 pound per year maximum level. The IAWWT system will include two treatment units. The IAWWT unit located at the SWRB will have a nominal 300 gpm capacity and the unit located at the Bionitrification Treatment/Effluent Treatment System (IAWWT[BDN-ETS]) will have a nominal capacity of 100 gpm.

Current activities in this area are as follows:

- The draft Standard Operating Procedures (SOPs) for the IAWWT(SWRB) were issued for review.
- Bids for the IAWWT Unit at the Bionitrification-Effluent Treatment System (IAWWT-BDN/ETS) were received on April 16, 1992. A Construction Work Order (CWO) was subsequently issued on April 16 and the contract was awarded on the same day with a predicted start date of May 4, 1992. The construction manager has been authorized to proceed with early procurement for long-lead items in order to meet the commitment date of July 30, 1992.
- The IAWWT(SWRB) underground sprinkler system piping is complete. The system was tested, passed inspection, and was backfilled.

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RA No. 3, South Groundwater Contamination Plume (continued)

Part 4

An inspection of the private residences where a common well has recently indicated uranium contamination levels greater than 20 ppb was conducted. Specific information regarding flow rates, availability of head tanks, and water use was obtained. The information gained indicates that several of the systems being considered for use in uranium removal will be adequate for this installation. Preliminary contacts were made with procurement in order to define an expedited procurement route for the required equipment installation. Additionally, a Request for NEPA Services was prepared and submitted in order to determine what level of NEPA document is required. It is anticipated that a Categorical Exclusion will be sufficient.

Part 5

Part 5 was added to the South Plume in order to address the relocation of the Part 2 well field. Part 5 includes groundwater modeling and geochemical investigation of the area south of the well field to determine if 20 ppb uranium concentration in groundwater is present downgradient of the Part 2 well field.

The Draft Removal Action Groundwater Modeling Report which justifies the relocation of the Part 2 well field was submitted to the U.S. and Ohio EPAs on April 17, 1992.

Work in May for RA No. 3, Parts 1 - 5 will focus on acquiring property acquisition for Parts 1, 2 and 5; preparation for Part 5 hydropunching (issuing responses to comments on Part 1 and 2/3 Work Plans); completing field soil sampling and analysis for Parts 1 and 2A; purchasing contaminated homeowner well treatment systems; and continuing work on Parts 2C and 2D.

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RA No. 4, Silos 1 and 2

Installation of the bentonite in Silos 1 and 2 was completed on November 28, 1991. This was ahead of the scheduled commitment date of December 1, 1991.

A Silos 1 and 2 Removal Action, Bentonite Effectiveness Monitoring Plan, that describes the methodology and computer model that will be used to determine the effectiveness of the bentonite in attaining the .015 pCi/l goal was submitted to the U.S. EPA on January 27, 1992. On February 19, 1992, the plan was disapproved by the U.S. EPA. The remaining issues on calculating the conversion from measured headspace radon concentration to flux from the dome were addressed in the revised document submitted on March 13, 1992. Draft comments concerning specific parameters used in the calculations were received from the U.S. EPA on March 31, 1992. U.S. EPA and Ohio EPA approval of the Bentonite Effectiveness Monitoring Plan was received on April 24, 1992.

Also in April, calibration and checkout of the data logging system continued. The data logging system will automatically record data for Silos 1 and 2 headspace radon monitoring, Silos 1 and 2 headspace humidity monitoring, Silos 1 and 2 temperature and pressure monitoring, and four K-65 area exclusion radon gas monitors. The K-65 Emergency Power Supply System was installed. This will be used to support the monitoring functions of the K-65 Area.

Work in May will include continuation of the calibration and checkout of the data logging system and the preparation of the Bentonite Effectiveness Monitoring Report. All parameters will be put into the ISC computer model in May, for transmittal of the initial report with the April Consent Agreement Report. In the interim, the Selected Radon Data Report can be found in Enclosure C.

As defined in the Removal Action Work Plan and the Federal Facility Agreement, data associated with monitoring the effectiveness of the bentonite installation is included in Enclosure C.

| KEY MILESTONES | STATUS | DUE DATE |
|---|-----------------------------------|---------------------|
| Complete installation of bentonite slurry into Silos 1 and 2 | Completed November 28, 1991 | December 1, 1991 |
| Submit Bentonite Monitoring Plan | Completed January 27, 1992 | January 27, 1992 |
| Report monitoring results for bentonite effectiveness of EPA - 1st run 4/92 | Open, ahead of schedule | May 22, 1992 |

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RA No. 5, K-65 Decant Sump Tank

Removal of the liquid from the K-65 decant sump tank was completed on April 16, 1991 when the liquid was transferred to the holding tanks in Plant 2/3.

The analytical results for the general water quality parameters, Hazardous Substances List (HSL) volatile organics, HSL semi-volatile organics, and HSL pesticide organics and inorganics were received for the decant liquid taken during the implementation of the Removal Action. A Materials Evaluation Form (MEF), with the available analysis, was completed to determine the required treatment of the decant liquid. The liquid pumped from the K-65 decant sump tank will be treated by the FEMP Wastewater Treatment Facility.

Work in May 1992 will include completing the required treatment of the decant liquid based on the MEF and available analytical results.

| KEY MILESTONES | STATUS | DUE DATE |
|---|--------------------------|-----------------|
| Complete the removal of the liquid from the K-65 decant sump tank | Completed April 16, 1991 | April 26, 1991 |

RA No. 6, Waste Pit 6 Residues

This removal action was completed on December 19, 1990. The only remaining issue related to the Waste Pit 6 Exposed Material Removal Action involves the placement of air monitors to augment the site requirements for estimating the off-site releases of potentially harmful contaminants. The monitors have been procured. Installation is expected in early CY1992. Construction began on air monitors with the placement of utility poles near air monitor #2. Air monitor #3 was relocated north since the original location was near an existing air monitor. 6 of the 9 utility poles were placed. Excavations and gravel placement are in progress to set precast concrete bases for the 4 air monitors. A walkthrough of the area was made; it was determined that no excess soil will have to be boxed on this project and a RCRA Characterization will be determined based on process knowledge.

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RA No. 7, Plant 1 Pad Continuing Release

This removal action consists of three phases. Phase I, which implements the run-on/off control measures, is complete. Phase II addresses the installation of 80,000 square feet of a newly covered and controlled concrete storage pad. Phase III involves activities to upgrade the remaining 375,000 square feet of the existing Plant 1 storage pad. The Phase III upgrading activities include installation of a polymeric vapor barrier over the existing concrete and the installation of concrete above the barrier with an epoxy sealant. In addition, 22,000 square feet of the Phase III work area will be enclosed beneath a tension structure.

Activities in April included the procurement of materials and excavation of an additional 10% of the soil for the Phase II work. Implementation for the post-excavation sampling of the Phase II area is continuing.

Activities in May will include the continued excavation of the Phase II soils by the construction contractor. Implementation for the post excavation sampling of the Phase II area will continue.

| KEY MILESTONES | STATUS | DUE DATE |
|-----------------------|-------------------------------|----------------------|
| Complete Phase I | Completed January 17, 1992 | March 13, 1992 |
| Complete Phase II | Open, on schedule | December 21, 1992 |
| Complete Phase III | Open, on schedule | February 21, 1995 |

RA No. 8, Inactive Flyash Pile Control

The Inactive Flyash Pile Isolation Activity, which involved the installation of a plastic chain link fence and the posting of warning signs, was completed ahead of schedule on December 23, 1991.

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RA No. 9, Removal of Waste Inventories

During April 1992, 9,839 drum equivalents (DE) of low-level waste (LLW) were dispositioned. The April goal for shipments was 10,912 DEs. The FY1992 cumulative total LLW shipped is 53,914 DEs.

| KEY MILESTONES | STATUS | DUE DATE |
|--|------------------------|---------------|
| Update existing internal procedures to ensure that appropriate shipping documentation is entered into the administrative record file | To be updated annually | June 30, 1992 |

DOE-NV, REECo, and Nevada Department of Environmental Protection conducted a surveillance on the FEMP Waste Shipping Program April 28-30, 1992. Four areas of the program were audited: thorium, traceability, characterization, and the 1991 DOE-NV Surveillance Closeout.

Relating to the Surveillance:

- All open issues pertaining to the thorium waste shipments have been resolved, and the audit has been closed out. The audit team will recommend to DOE-NV management that the thorium waste stream be approved. Formal approval is anticipated in the near future.
- A traceability review of all five waste application waste streams was conducted and no discrepancies were noted. The review was comprehensive and traced accountability of characterization data from container to characterization file and file to container. The review was very successful.
- The Nevada Department of Environmental Protection participated in a review of characterization procedures and data. The review was very successful and no discrepancies were noted.
- All but four issues from the 1991 DOE-NV Surveillance Audit have been resolved. The closeout was conducted early as a matter of convenience, and more than 60 issues were resolved. Many of the remaining issues will be addressed in May.

There will be 9,581 DEs shipped in May.

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RA No. 10, Active Flyash Pile Controls

The Work Plan for the Active Flyash Pile Controls Removal Action was completed and submitted ahead of schedule to the U.S. and Ohio EPAs on February 18, 1992. Comments from the Ohio EPA were received on March 18. U.S. EPA approval of the Plan was received on March 30. Resolution of these comments and a revised version of the Work Plan were transmitted to the EPAs on April 29.

Design for this removal action continues on schedule.

| KEY MILESTONES | STATUS | DUE DATE |
|--|--------------------------------|---------------|
| Submit Active Flyash Pile Work Plan to the U.S. EPA for approval | Completed February 18, 1992 | March 2, 1992 |

RA No. 11, Pit 5 Experimental Treatment Facility

Removal Action No. 11 was completed. The removal of the contents, structure, and filter material for the Experimental Treatment Facility was completed 22 days ahead of schedule. Demobilization of the ETF Project has been completed. It has been backfilled and capped, using a clay cover.

Verbal authorization was received from both U.S. EPA and Ohio EPA to modify the sampling and analysis requirements of the approved Work Plan. The authorization modification allows the analysis of the soil samples to be completed by a "non-CLP" laboratory.

Activities for April 1992 included the following: all decon, rinseate, and runoff water was removed from the 8,000 gallon tank and containerized. This liquid is to be labeled, stored, and handled as a hazardous substance. Berm piping was taken to Decon for re-use. The ETF was backfilled and capped utilizing a clay cover.

| KEY MILESTONES | STATUS | DUE DATE |
|---|-----------------------------|----------------|
| Complete removal action within 120 days of Work Plan approval | Completed March 20, 1992 | April 11, 1992 |

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RA No. 12, Safe Shutdown

The Safe Shutdown Removal Action documents the ongoing shutdown activities that will remove uranium and other process/raw materials from equipment and pipe lines in areas of formerly used processing equipment and will disposition the removed materials offsite.

| KEY MILESTONES | STATUS | DUE DATE |
|--|----------------------------------|----------------------|
| Removal Action Memorandum Safe Shutdown Activities | Completed December 13,1991 | December 15, 1991 |
| Provide a schedule for providing an update to the deliverable submitted pursuant to the compilation of existing site documentation supporting the ongoing Safe Shutdown programs by January 15, 1992 | Completed, January 15, 1992 | January 15, 1992 |
| Update existing internal procedures to ensure that appropriate documentation is entered into the administrative record file | To be updated annually | June 30, 1992 |

The preliminary assessments for each major process area are continuing. Plants 1, 2/3, 4, 8, and 9 have been completed.

Inventorying of expense equipment items continued; 2,351 expense items have been inventoried to date. Of those, 1,987 items are on an internal "shopping list" to ascertain future need, 27 have been transferred to Maintenance, and 337 have been placed on AC-563 Forms to be excessed.

The capital equipment inventory continued; 1,195 items have been identified. Of those, 961 have been put on AC-563 Forms to be excessed, and 305 have been identified as "In Use/Future Use" items. The capital equipment disposition task is 66 percent completed.

Maintenance work orders for equipment disconnects in Building 51 were initiated as planned. The task to isolate and remove the equipment is approximately 50 percent completed.

Relocation of Building 51 capital equipment and expense items begun in March is continuing. This equipment is being relocated to allow for the Advanced Waste Water Treatment (AWWT) project to proceed.

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RA No. 12, Safe Shutdown (Continued)

The task to prepare the task specific Health and Safety Plan for Safe Shutdown is ongoing.

The project to transfer the remaining 4A metal inventory from the Fernald Environmental Management Project (FEMP) to the Defense Consolidation Facility in Snelling, South Carolina, is on schedule. The Scope of Work and Health and Safety Work Plan have been drafted and other preliminary planning is being completed. This seven-month effort will result in an inventory reduction of ~2838 metric tons uranium, (~6,300,000 net pounds of material).

Response to the *Commerce Business Daily* notices on uranium has been very positive. Seventeen inquiries have been received to date, and packets of all available analyses have been mailed to each company. A general information meeting on normal and enriched uranium only is planned for May 15 to give all interested parties a chance to view and discuss the material in detail.

Planning for the project to transfer selected pieces of the derby breakout and slag milling systems to the Department of the Army for relocation at Aerojet Ordnance Tennessee is ongoing. A preliminary maximum cost estimate was given to Aerojet, but it is being reviewed to eliminate duplicated effort and disconnect costs that will be covered by Safe Shutdown.

The document prepared by Safe Shutdown addressing the historical management of the thorium inventory at the FEMP and the questions raised by the Office of Counsel concerning the pending sale of thorium to Atomergic has been reviewed. Concurrence to the sale was agreed upon by all parties; however, the Office of Counsel concurred with the notation that a letter would follow to management detailing the risks. When that letter is received, Safe Shutdown can then request final concurrence from management on proceeding with the sale.

As projected last month, the review cycle of the task order to conduct the hazard surveys for each process area was completed and Parsons is beginning the task.

The first meeting of the task team to initiate the Risk Assessment Report, which had been planned for April, was postponed to allow time to evaluate existing Risk Assessment documentation.

Planned activities for May include scheduling the first meeting of the task team to initiate the Risk Assessment Report, continuing the preliminary assessments for each major process area, and continuing the capital equipment disposition effort.

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RA No. 13, Plant 1 Ore Silos

The Plant 1 Ore Silos Removal Action will include the dismantling of the Plant 1 Ore Silos and their support structure. This dismantling will eliminate the potential threat of additional material releases and the safety hazard due to structural deterioration of the silos and their support structure. The activities in this removal action will include characterization, removal, containerization, and disposal of the materials making up the above ground portion of the facility.

Comments on the Removal Action Work Plan were received from the U.S. EPA on February 27, 1992. The revised Removal Action Work Plan was submitted to the U.S. EPA on March 27, 1992. Conditional approval of the Work Plan was received from the Ohio EPA on April 13, 1992. May activities will include approval and issue of the prepared design.

| KEY MILESTONES | STATUS | DUE DATE |
|--|------------------------------|------------------|
| Submit Work Plan to the U. S. EPA | Completed January 9, 1992 | January 10, 1992 |
| Submit Revised Work Plan to the U.S. EPA | Completed March 27, 1992 | March 30, 1992 |

RA No. 14, Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator

This removal action will include the isolation or removal and disposition of contaminated soils in the vicinity of the Sewage Treatment Plant (STP). This will eliminate the potential threat of additional material releases to the environmental media through migration. The activities in this removal action will include characterization, removal, containerization, and storage/disposal of the materials.

April activities included continued preparation for the implementation of the Removal Action. Comments on the Work Plan were received from the U.S. EPA on February 28, 1992. The revised Work Plan was resubmitted to the U.S. EPA on March 30, 1992.

| KEY MILESTONES | STATUS | DUE DATE |
|--|-------------------------------|------------------|
| Submit Work Plan to the U.S. EPA | Completed January 23, 1992 | January 23, 1992 |
| Submit Revised Work Plan to the U.S. EPA | Completed March 30, 1992 | March 30, 1992 |

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RA No. 15, Scrap Metal Piles

The Scrap Metal Piles Removal Action will detail the stabilization and disposition of LLW scrap metal currently stockpiled onsite. This Removal Action will eliminate the potential threat of additional material releases to the environment. Approximately 1,300 tons of scrap copper along with approximately 3,000 tons of recoverable scrap metals are the focus of this Removal Action.

April activities included continued preparation for the implementation of the Removal Action. Comments on the Work Plan were received from the U.S. EPA on March 4, 1992. Comment resolution occurred during March and the revised Work Plan was resubmitted in April 1992.

| KEY MILESTONES | STATUS | DUE DATE |
|--|-------------------------------|------------------|
| Submit Work Plan to the U.S. EPA | Completed January 31, 1992 | January 31, 1992 |
| Submit Revised Work Plan to the U.S. EPA | Completed April 3, 1992 | April 3, 1992 |

RA No. 16, Collect Uncontrolled Production Area Runoff – Northeast

The scope of this removal action is to collect the remaining stormwater from the perimeter of the 136 acre production area that currently discharges to Paddy's Run and divert it through the existing storm sewer system to the SWRB.

The Removal Action Work Plan was submitted to the U.S. EPA and the Ohio EPA on March 2, 1992, as required by the Consent Agreement.

Comments from the U.S. EPA and Ohio EPA were received on April 21, 1992 and April 7, 1992, respectively. Response to comments is ongoing.

| KEY MILESTONES | STATUS | DUE DATE |
|----------------------------------|----------------------------|---------------|
| Submit Work Plan to the U.S. EPA | Completed March 2, 1992 | March 2, 1992 |

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RA No. 17, Improved Storage of Soil and Debris

This removal action will include the management and appropriate storage for contaminated soil and debris onsite. This will eliminate the potential threat of additional material releases to the environment due to wind, rain, or vehicular traffic. The activities in this Removal Action will include characterization, interim storage, and management of the contaminated soil and debris materials until the final remediation under Operable Unit 3.

April activities included continued preparation for the implementation of the Removal Action. May activities will include resolution of comments on the Removal Action Work Plan.

| KEY MILESTONES | STATUS | DUE DATE |
|--|--|-----------------|
| Submit Work Plan to the U.S. EPA | Completed March 25, 1992 | March 25, 1992 |
| Receive U.S. EPA comments on the Work Plan | Open, awaiting comments | April 24, 1992 |
| Submit Revised Work Plan to the U.S. EPA | Open, awaiting completion of above milestone | May 25, 1992 |

RA No. 18, Control Exposed Material in Pit 5

The Control Exposed Material in Pit 5 Removal Action is being developed and implemented using a phased approach. This phased approach considers and utilizes information obtained from the liner repair activities, the pit berm investigation, which addresses the overall pit structural integrity, and the significance and magnitude of potential and actual emissions from the waste pit. The schedule for this Removal Action is currently being revised to reflect the current philosophy for accomplishing the scope.

Activities in April 1992 included the submittal of the Removal Action Work Plan to Ohio EPA and U.S. EPA, and the evaluation of a crane vs. a dredge in implementing this removal action.

Planned activities for May 1992 include the following: resolve Ohio EPA and U.S. EPA comments on the Removal Action Work Plan, and issue to DOE an Alternatives Evaluation utilizing either the drag-line or clamshell bucket for the relocation of the Pit 5 materials.

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RA No. 18, Control Exposed Material In Pit 5 (continued)

| KEY MILESTONES | STATUS | DUE DATE |
|--|--------------------------|-----------------|
| Submit a Removal Action Work Plan to the U.S. EPA and the Ohio EPA | Completed March 26, 1992 | March 30, 1992 |

RA No. 19, Plant 7 Dismantling

The Plant 7 Dismantling Removal Action will include decontamination and dismantling of the Plant 7 structure. This dismantling will eliminate the potential threat of additional material releases and the safety hazard due to histoplasmosis. The activities in this removal action will include characterization, decontamination, removal, containerization, and disposal of the materials making up the above ground portion of the facility.

April activities included continued work for preparation of the Characterization Plan for the Removal Action. May activities will include initiation of project functional requirements.

| KEY MILESTONES | STATUS | DUE DATE |
|----------------------------------|-------------------|-----------------|
| Submit Work Plan to the U.S. EPA | Open, on schedule | April 20, 1993 |

RA No. 20, Stabilization of UNH Inventories

The Stabilization of UNH Inventories Removal Action will remove and prepare for safe storage approximately 230,000 gallons of acidic UNH that is currently stored in 21 tanks in and around Plant 2/3. Existing processing equipment will be used to neutralize the solutions, filter the precipitate, and package the resulting filter cake in double containment for safe storage. This activity was previously part of Removal Action No. 12, Safe Shutdown, but is being accelerated as a separate expedited response.

Activities in April included completing the System Operable Test and operating the West Eimco Filter to process sump water.

The schedule for commencing and finishing the processing will be finalized, following approval that all required safety systems are in place and operating.

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Period Ending April 30, 1992

RA No. 20, Stabilization of UNH Inventories (continued)

| KEY MILESTONES | STATUS | DUE DATE |
|------------------------------------|-------------------------|--------------------------|
| System Integrity Testing | Completed | February 13, 1992 |
| Submit Flow Charts to the U.S. EPA | Completed April 8, 1992 | March 31, 1992 |
| Commence Processing Material | Open | Schedule being developed |
| Finish Processing Material | Open | Schedule being developed |

RA No. 21, Expedited Silo 3

On December 13, 1991, an Action Memorandum was issued to initiate an expedited removal action. The Silo 3 Removal Action mitigated the potential release of material to the environment and included the following actions:

- All obvious openings in the dust collector hopper were covered and sealed.
- The dust collector was removed.
- All obvious pathways for release were capped or covered.

Implementation of the Removal Action was initiated on December 20, 1991. The material within the dust collector hopper exposed to the environment was stabilized on December 21, 1991. Loose equipment on the silo dome was removed.

| KEY MILESTONES | STATUS | DUE DATE |
|---|------------------------------|------------------|
| Complete removal of the dust collector on Silo 3 dome | Completed January 8, 1992 | January 15, 1992 |

Work in May will center on preparation and submittal of the Material Evaluation Form and disposition of the equipment removed from Silo 3.

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RA No. 22, Waste Pit Area Containment Improvement

A Removal Site Evaluation (RSE) was prepared in 1991 and submitted to DOE. This RSE is presently being updated to include information on the Berm for Pit 4 and the Burn Pit cap. The Action Plan to address the Waste Pit Area Roads and Exposed Surfaces was transmitted to DOE on February 24, 1992. This Action Plan is now being used as the basis for developing a Work Plan.

The schedule for the Waste Pit Area Containment Improvements is being revised to reflect the current project scope.

Activities for April 1992 included the initiation of the Work Plan and other support documents.

Planned activities for May 1992 will include the development of the complete scope and Work Plan for the Removal Action.

| KEY MILESTONES | STATUS | DUE DATE |
|----------------------------------|-------------------|-----------------|
| Submit Work Plan to the U.S. EPA | Open, on schedule | August 31, 1992 |

RA No. 23, Inactive Flyash Pile

A field investigation is being conducted to determine if select locations within the Inactive Flyash Pile and South Field Disposal area boundary (RA No. 8) will require soil "hot spots" excavation. The results of this investigation and a schedule for submittal of a work plan (if required) are due to the EPAs on June 30, 1992.

RA No. 24, Pilot Plant Sump

This sump is located on the southwest side of the Pilot Plant. The sump consists of a stainless steel cylinder approximately two feet in diameter and ten feet deep. This sump was built to remove liquids from the floor drains of the Pilot Plant and was actively used only during the renovation of the Pilot Plant in 1969.

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RA No. 24, Pilot Plant Sump (continued)

The sump is filled with a thick liquid and sludge. Analytical results of the sump contents show high concentrations of metals: lead, copper, chromium, nickel, as well as thorium and volatile organic compounds. Initial planning for the Removal Action for implementing an RSE got underway in March 1992. Scoping and planning continued in April 1992. May activities will include initiation of Work Plan preparation.

| KEY MILESTONES | STATUS | DUE DATE |
|----------------------------------|-------------------|---------------|
| Submit Work Plan to the U.S. EPA | Open, on schedule | July 31, 1992 |

RA No. 25, Nitric Acid Tank Car and Area

The Nitric Acid Rail Car is located on the northern perimeter of the production area and east of Building 63. The FEMP RCRA Part A and Part B identify this tank car and area surrounding it as a Hazardous Waste Management Unit.

This high-grade, stainless steel tank car has a capacity of approximately 100,000 pounds and measures approximately 10 ft wide x 40 ft long x 15 ft high. This unit operated from 1952 until about 1989. This tank car stored nitric acid used at the FEMP. Based on recent analysis, the tank car now contains 50-100 gallons of nitric acid.

This Removal Action includes removal of residual contents of the tank car followed by decontamination and dispositioning of the tank car, as well as characterizing and subsequent excavation and disposition of the nearby soils for contaminants related to the tank car.

| KEY MILESTONES | STATUS | DUE DATE |
|----------------------------------|-------------------|------------------|
| Submit Work Plan to the U.S. EPA | Open, on schedule | October 30, 1992 |

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RA No. 26, Asbestos Removals (Asbestos Program)

This removal action documents ongoing asbestos abatement activity at the FEMP to mitigate the potential for contaminant release and migration. Abatements within the Asbestos Program include in-situ repairs, encasement, and encapsulation as well as removals.

Activities in April involved continuing compilation of applicable procedures and supporting text to begin assembly of the Work Procedures document. May activities will include submittal of the Work Procedures document.

| KEY MILESTONES | STATUS | DUE DATE |
|--|-------------------|--------------|
| Submit Work Procedures to the U.S. EPA | Open, on schedule | May 19, 1992 |

RA No. 27, Management of Contaminated Structures at the FEMP

Submit EE/CA study to identify alternatives for managing contaminated structures; document the selection of a response(s) that will mitigate the potential threat to workers, the general public, and the environment associated with these structures; and, address health and environmental impacts associated with the proposed action. April activities included initial scoping of the work. Data gathering activities will begin in May 1992.

| KEY MILESTONES | STATUS | DUE DATE |
|--|-------------------|-------------------|
| Submit Engineering Evaluation/Cost Analysis (EE/CA) to the U.S. EPA to support Proposed Removal Actions for Managing Contaminated Structures | Open, on schedule | December 15, 1992 |

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1.0 Operable Unit 1

Operable Unit 1 as defined in the Amended Consent Agreement includes the Waste Pits 1-6, Clearwell, Burn Pit, berms, liners and soil within the operable unit boundary.

1.1 Field Investigation

1.1.1 13-Well Program

Scope:

The 13 wells were installed into Waste Pits 1 - 4 and the Burn Pit. Waste samples were collected at various locations during boring operations and analyzed for Hazardous Substance List (HSL) parameters and characteristic radionuclides. Wells were developed and sampled to determine constituents of concern in the waste pit leachate.

Status:

All waste pit wells have been sampled per the approved work plan. Laboratory analysis was completed on all Operable Unit 1 samples in February. Data validation and entry into the RI/FS database are ongoing.

Issues/Corrective Actions:

None to report.

1.1.2 Radon Sampling Program

Scope:

The Radon Sampling Program was initiated in an effort to develop a representative measurement of radon releases from the waste pit area. The data will be used to support National Emission Standards for Hazardous Air Pollutants (NESHAP) compliance and Remedial Investigation/Feasibility Study (RI/FS) characterization requirements. The program consists of a one-time measurement of radon release using large area activated charcoal collectors (LAACC). Approximately 100 LAACCs were placed on Waste Pits 1, 2, and 3. The LAACCs were left on the pits for 24 hours and then removed and analyzed. Continuous ambient air radon monitoring was also conducted during the period.

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1.1.2 Radon Sampling Program (continued)

Status:

The radon sampling is complete for Waste Pits 1, 2, and 3. The data has been evaluated and a draft report has been issued. Sampling will not be attempted on Pit 4, since it is covered by a synthetic cap. Pits 5 and 6 were not sampled due to standing water covering the waste materials. A draft report has been prepared and is currently undergoing internal site review.

Issues:

Sampling of Pits 4, 5, and 6 have been deemed unadvisable since Pit 4 is covered by a synthetic cap and Pits 5 and 6 have standing water covering the waste materials. A revision/variance from the SAP is required.

Corrective Actions:

Request a variance from U.S. EPA to the work plan as discussed in the February Project Manager's meeting. Current plans call for submission of the variance with the Radon Sampling draft report.

1.1.3 Pits 5 and 6 and the Clearwell Sampling Program

Scope:

The objectives of the Pits 5, 6, and Clearwell Sampling Program are to obtain sufficient quantities of samples for treatability studies and to provide additional RCRA characterization information on the waste pits. The pits were sampled using a clamshell and crane.

Status:

The sampling of Pits 5, 6, and the Clearwell was scheduled to begin on December 16, 1991. The sampling was delayed due to the unavailability of a long-boom crane which is essential to the sampling effort. Samples were extracted from Pits 5 and 6 on January 29 and February 20, 1992, with a clamshell and crane. These samples have been shipped to the treatability laboratory. Specimen preparation for stabilization testing is ongoing. The field crew and sampling equipment were relocated to the Clearwell where samples were collected on March 8, 1992 and shipped to the treatability laboratory on March 31, 1992.

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1.1.3 Pits 5 and 6 and the Clearwell Sampling Program (Continued)

With completion of the Clearwell sampling, all of these treatability and characterization sampling activities are complete. The crane and other sampling equipment are in the process of being decontaminated and demobilized.

Issues/Corrective Actions:

None to report.

1.2 Treatability Studies

Scope:

The Operable Unit 1 treatability studies will evaluate the two treatment process options identified in the Operable Unit 1 Initial Screening of Alternatives document. The two treatment process options are cement stabilization and vitrification. The technical feasibility of these technologies will be evaluated by conducting a series of experiments on both composite waste samples and individual strata samples. Ranges of formulations will be investigated as will other performance criteria such as compressive strength, leachability, bulking factor and permeability. For cement stabilization, binding agents that will be evaluated include portland cement, flyash, and sodium silicate. Clay (attapulgite and clinoptilolite) will be added to reduce the leachability of metals in the waste. Glass formers and modifiers being considered for vitrification are flyash, soil, and sodium hydroxide.

Status:

To date, all Stage I molds for the cement stabilization studies have been made for all pits. Unconfined compressive strength (UCS) tests have been performed for all pits. Modified toxicity characteristic leaching procedures (MTCLPs) have been initiated for all pits except the Clearwell. MTCLP extraction results are being received periodically and are being evaluated. With the collection of the Clearwell sample, all treatability sampling activities are complete.

Trial waste vitrification tests were completed using a waste surrogate to validate test procedures. The trial melts indicated that the glass would be less reactive with the crucible if platinum/gold crucibles were used instead of ceramic. Using the platinum/gold crucibles, preliminary stage vitrification melts were conducted on Pits 1 through 6 and the Burn Pit using waste without any additives. Preliminary results indicate variability of glass quality from pit to pit.

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1.2 Treatability Studies (continued)

To date, 16 of 40 Preliminary Phase Stage I Additional vitrification melts have been completed using additives to the waste. Additives tested include waste pit area soil, site flyash and sodium silicate.

Issues:

The delay in collecting samples from Pits 5, 6, and the Clearwell may impact the Treatability Study schedule.

Mixtures of site flyash and waste produced a corrosive material during vitrification tests. The mixture corroded several of the platinum/gold crucibles being used.

Corrective Actions:

Prepare a schedule recovery plan and implement it as soon as possible to maintain schedule milestones supporting preparation of the Preliminary/Advanced Treatability Study Report.

The advanced stages of treatability testing will proceed on Pits 1, 2, 3, 4, and the Burn Pit material without waiting for completion of preliminary testing on Pits 5, 6, and the Clearwell. As preliminary stage testing on Pits 5, 6, and the Clearwell material are completed, they will proceed to the advanced stages of treatability testing.

Tests are being conducted to see if a protective coating can be applied to other types of crucibles to protect them against corrosion during vitrification melts using site flyash.

1.3 Remedial Investigation

Scope:

A RI Report will be prepared in accordance with the U.S. EPA Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (EPA Directive 93553-01) and the approved Risk Assessment Work Plan Addendum.

Status:

The first activity scheduled for the RI is the field data analysis. The objective of the field data analysis activity is to evaluate the preliminary data available from field measurements while awaiting results of lab analysis. The field data analysis was initiated on

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1.3 Remedial Investigation (continued)

December 2, 1991 with the revision of the waste pit cross sections. With the new boring logs that were obtained from the recent 13-well field investigation, data is available for the depths of Waste Pits 1, 2, 3, 4, and the Burn Pit. Preliminary data from the new borings indicates the projected depths of the waste pit bottoms are within three to six feet of their actual bottoms. The exception to this finding is the Burn Pit, where the actual bottom depth is approximately 10 feet deeper than originally projected. The cross sections were completed the week of March 1, 1992 and are undergoing internal review.

Issue:

Delays in completion of data validation and entry into the database are slowing evaluation of the RI data and delaying the submission of the RI Report.

Corrective Action:

Additional staff have been assigned to assist in completion of data validation and entry into the database. Work is proceeding on non-data-related tasks such as field program descriptions and text editing. A recovery plan is in progress.

OU 1 REMEDIAL INVESTIGATION REPORT

PRIMARY

| SCOPE | SUBMIT TO EPA | RECEIVE FROM EPA | SUBMIT TO EPA FINAL |
|--|--------------------------|--------------------------|---------------------------|
| Details the nature and extent of contaminants within the Operable Unit 1 study area. Estimates the volume of contaminated media and materials. Provides a baseline risk assessment and establishes remedial action objectives. | 10/12/93 C 03/03/93 F | 12/11/91 C 05/03/93 F | 01/10/94 C 05/31/93 F |

C = Consent Agreement Date

F = Forecast Complete

A = Actual

Initial stages are underway including model development and data analysis. Cross sections of the waste pits are being revised to incorporate data from the recent 13-boring program.

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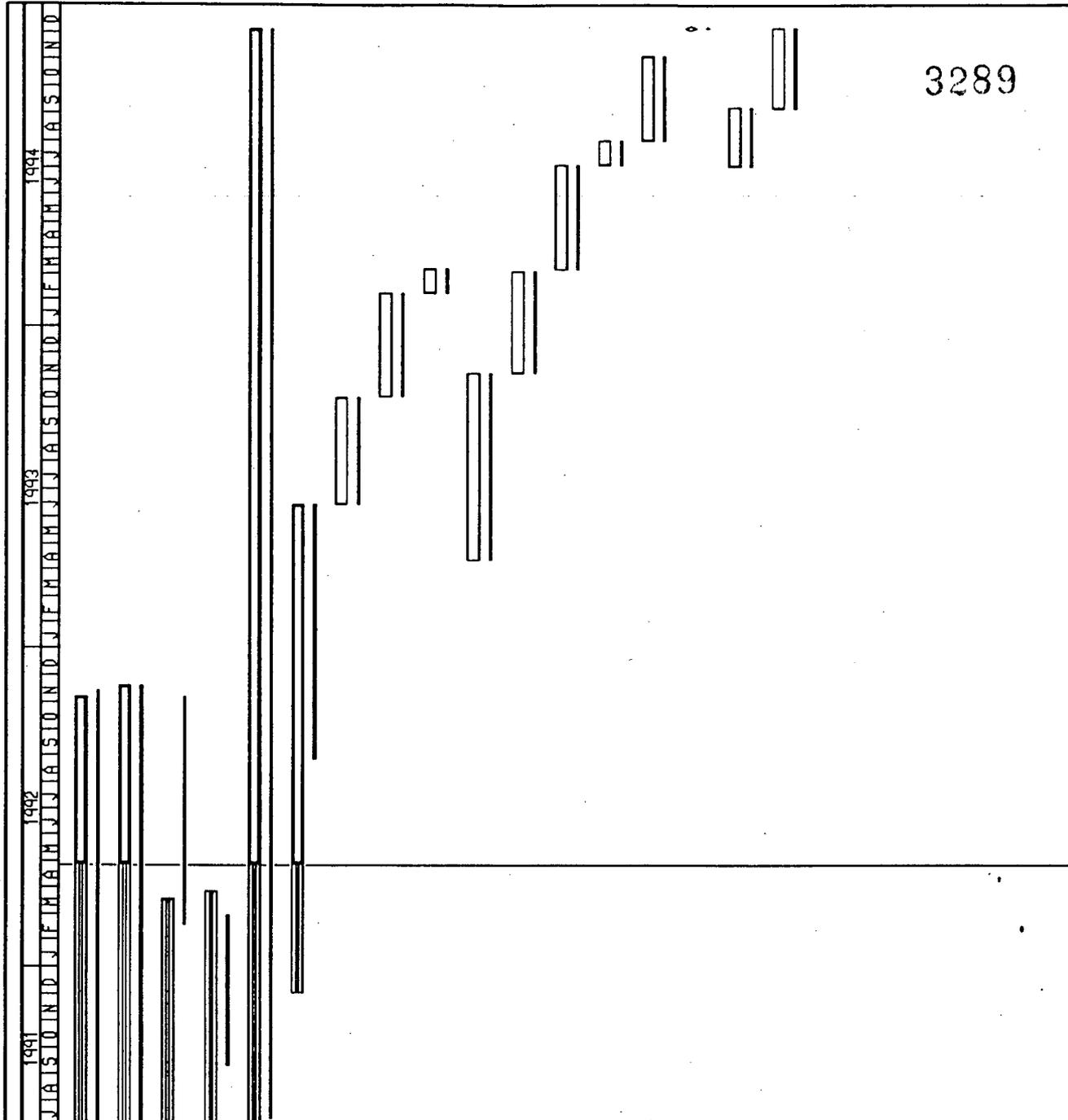
Period Ending April 30, 1992

1.4 Planned Activities for May 1992

Complete data validation and 90% verification of database entry for the 13-well program.

Continue the preliminary phase of cementation and vitrification treatability testing.

Continue preparation of Draft RI Report and recover schedule.



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| | |
|--------------------------|----------|
| Prepared by ASI/IT Corp. | |
| Date | Reviewed |
| | Approved |

Sheet 1 of 1
 Data Date: 26APR92
 Plot Date: 5MAY92

RI/FS PROGRAM CURRENT
 FERNALD ENVIRONMENTAL MGMT. PROJECT
 FEMP RI/FS OUI 1 CONSENT AGMT (LATE)

Project Start: 10CT90
 Project Finish: 11JAN99

Activity Bar/Late Dates
 Critical Activity
 Progress Bar
 Target Dates as of 10CT90

Primerica Systems, Inc. 1994-1991

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2.0 Operable Unit 2

Operable Unit 2, as defined in the Amended Consent Agreement, includes the Flyash Piles, other South Field disposal areas, lime sludge ponds, solid waste landfill, berms, liners, and soil within the operable unit boundary.

2.1 Field Investigation

2.1.1 19-Boring/Well Program

Scope:

This program provides additional characterization of the individual waste units within Operable Unit 2. Borings are located in both Flyash Piles, the Solid Waste Landfill and the South Field. If leachate is encountered during boring operations, wells will be installed and sampled. Sampling and characterization of standing water in the north Lime Sludge Pond is also included in the program.

Status:

All field characterization activities associated with the original work plan have been completed. The analytical results from the original program have been received, validated, and evaluated as per the work plan and data user requirements.

Additional sampling was required which was caused in part by not testing certain parameters for samples taken in the Active and Inactive Flyash Piles, the Solid Waste Landfill, and the South Field, or due to suspected matrix effects on several parameters.

Various parameters required analysis from these locations during the additional sampling, including TCLP volatile and semivolatile organic compounds, HSL, Appendix IX; full radiological, total organic carbon, and simulated rainwater leaching procedure (SRLP).

A Work Plan Addendum was written for extracting the additional samples. The additional borings were advanced in the areas indicated above in order to collect the parameters that were inadvertently missed or sustained matrix interference during laboratory analysis.

The samples were taken per the Work Plan Addendum and sent to the contract laboratory where analysis on the chemical and radiological parameters was completed during April.

Data validation is ongoing. No delay is expected in the delivery of the Operable Unit 2 RI Report as a result of this additional effort.

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2.1.1 19-Boring/Well Program (Continued)

Issues/Corrective Actions:

None to report.

2.1.2 Additional HSL Parameters Sampling Program

Scope:

This program provides for collection of samples from four shallow borings in the South Field. These samples are to be analyzed for HSL parameters to supplement the limited data available for this area.

Status:

All sample collection activities have been completed in prior months. Laboratory analyses for the additional sampling and subsequent HSL laboratory analysis have been completed.

Four additional samples were taken to augment the data set as part of the recent resampling effort described in Section 2.1.1.

Issues/Corrective Actions:

None to report.

2.2 Treatability Studies

Scope:

The purpose of this study is to provide additional information to support the FS and subsequent remedy selection for Operable Unit 2. Specifically, the study will demonstrate whether stabilization can achieve the desired level of material strength, as well as obtain quantitative data for geochemical modeling and subsequent computer modeling of groundwater contaminant transport. The study is composed of two parts: preliminary stages (to support remedy screening) and advanced stages (to support remedy selection). The preliminary stage involves evaluating a range of stabilization mix formulations in order to determine a representative formulation which meets the proposed strength criteria. The advanced stage involves performing tests on stabilized waste using representative formulations determined in the preliminary stage.

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2.2 Treatability Studies (Continued)

Status:

Permeability testing was completed during April. All TCLP results have been received and validated during this reporting period. Preparation of the Treatability Study Report was initiated during March. The Treatability Study Report is on schedule for FEMP review to begin on May 11, 1992.

Issues/Corrective Actions:

None to report.

2.3 Remedial Investigation

The purpose of the RI is to provide a summary of the field investigations and to support the FS by defining the nature and extent of the contaminants in the Operable Unit 2 study area; estimating the volume of contaminated media and materials; and providing a baseline risk assessment which establishes remedial action objectives (RAOs).

Status:

A preliminary draft of the first four chapters of the RI was completed during the month. Preparation of the fate and transport calculations and baseline risk assessment chapters of the RI Report is in progress. The RI Report is scheduled to be submitted for FEMP site review on May 18, 1992.

Issues:

The fate and transport calculations and the baseline risk assessment were delayed due to the data validation process. This caused an additional one week slip in the RI Report since the last status report. The Consent Agreement delivery date is not impacted.

Corrective Action:

A schedule recovery plan has been prepared and implemented to reduce the slippage.

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2.3 Remedial Investigation (Continued)

OU 2 REMEDIAL INVESTIGATION REPORT

PRIMARY

| SCOPE | SUBMIT TO EPA | RECEIVE FROM EPA | SUBMIT TO EPA FINAL |
|--|--------------------------|--------------------------|---------------------------|
| Details the nature and extent of contaminants within the Operable Unit 2 study area. Estimates the volume of contaminated media and materials. Provides a baseline risk assessment and establishes remedial action objectives. | 10/19/92 C 09/11/92 F | 12/18/92 C 11/11/92 F | 01/17/93 C 12/09/92 F |

C = Consent Agreement Date

F = Forecast Complete

A = Actual

2.4 Feasibility Study

The purpose of the feasibility study is to evaluate alternatives in detail with respect to the nine evaluation criteria developed by the U.S. EPA. The alternatives are analyzed individually against each criterion and then compared against one another to determine their respective strengths and weaknesses and to identify the key tradeoffs that must be balanced for the site.

Status:

The characterization review and alternative assessment were initiated in February 1992. The process of reviewing and updating applicable or relevant and appropriate requirements (ARARs) was initiated in March.

OU 2 FEASIBILITY STUDY REPORT

PRIMARY

| SCOPE | SUBMIT TO EPA | RECEIVE FROM EPA | SUBMIT TO EPA FINAL |
|---|--------------------------|--------------------------|---------------------------|
| Describes and analyzes potential remedial alternatives. A comparative analysis is performed for all alternatives. | 03/15/93 C 03/15/93 F | 05/14/93 C 05/14/93 F | 06/13/93 C 06/13/93 F |

C = Consent Agreement Date

F = Forecast Complete

A = Actual

Initial stages are underway including model development and data analysis.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

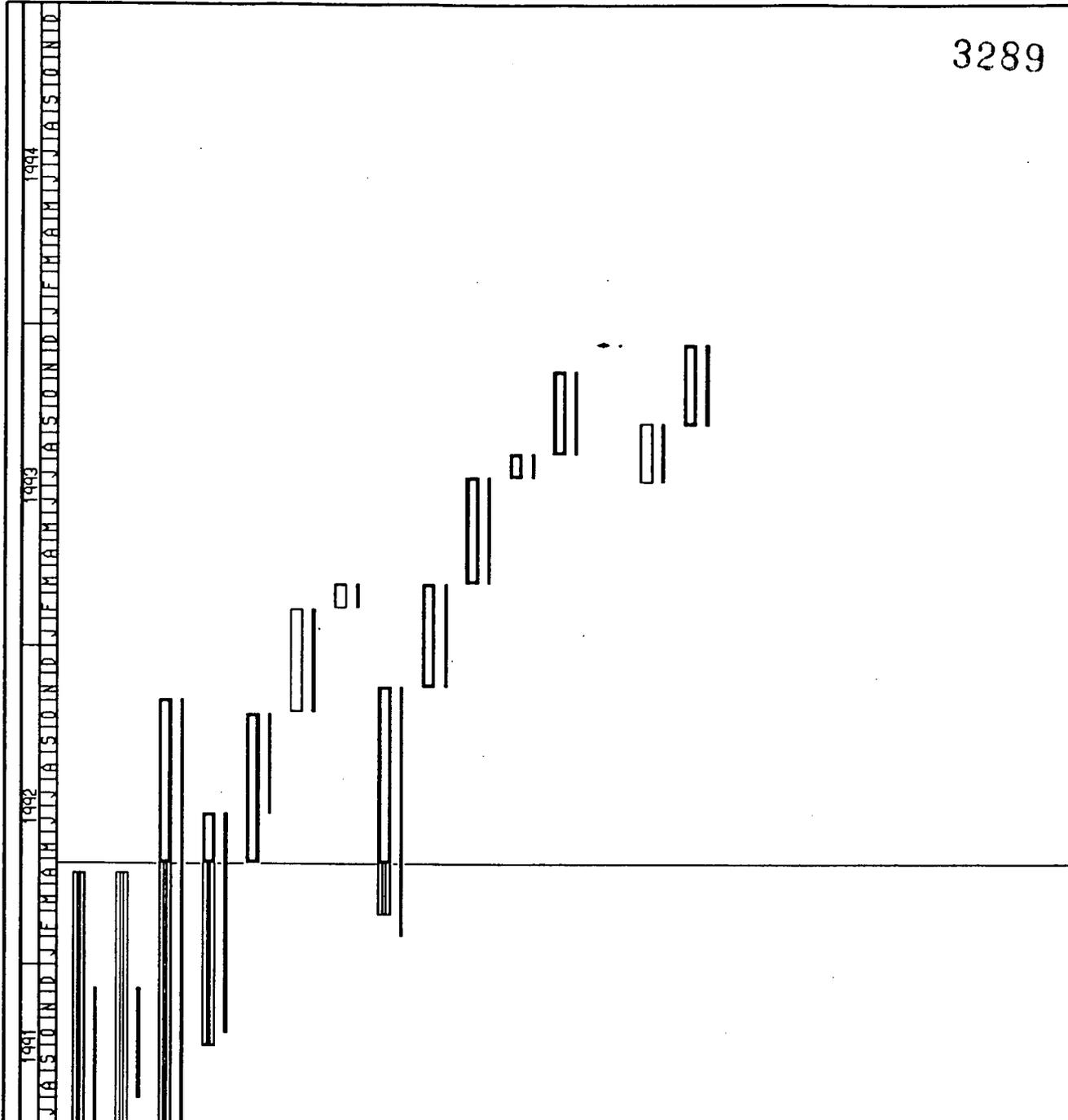
Period Ending April 30, 1992

2.5 Planned Activities for May 1992

Complete preparation of the Treatability Study Report for FEMP review.

Complete preparation of the RI Report for FEMP and DOE-HQ review.

Continue characterization review and alternative revision based on treatability results for the FS Report.



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| Prepared by ASI/IT Corp. | |
| DATE | REVISION |
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Sheet 1 of 1
 Data Date: 26APR92
 Plot Date: 5MAY92

RI/FS PROGRAM CURRENT
 FERNALD ENVIRONMENTAL MGMT. PROJECT
 FEMP RI/FS 002 CONSENT AGMT (LATE)

Project Start : 10CT90
 Project Finish: 11JAN99

| | |
|-----------------------------------|---------------------------|
| | Activity Bar/Late Dates |
| | Critical Activity |
| | Progress Bar |
| | Target Dates as of 10CT90 |
| Primavera Systems, Inc. 1984-1991 | |

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

3.0 Operable Unit 3

Operable Unit 3 as defined in the Amended Consent Agreement includes the Production Area and production associated facilities and equipment (includes all above - and below-grade improvements) including, but not limited to, all structures, equipment, utilities, drums, tanks, solid waste, waste product, thorium, effluent lines, K-65 transfer lines, wastewater treatment facilities, fire training facilities, scrap metal piles, feed stocks, and coal pile.

3.1 Initial Scoping/Work Plan Revisions

Operable Unit 3 initial scoping/work plan revision activities in April included submission of the first draft of the RI/FS Work Plan Addendum to DOE-HQ for review. Other tasks included supporting activities for preparation of the basic work plan and completion of the draft Sampling and Analysis Plan (SAP).

3.1.1 Development of the Draft Operable Unit 3 Work Plan Addendum

The Draft Operable Unit 3 RI/FS Work Plan Addendum was submitted to DOE-HQ for review on April 3, 1992. A review group meeting was held at DOE-HQ on April 16, 1992 and initial comments were provided to DOE-FN at that time. All DOE-HQ review comments were provided on April 24, 1992. Comment incorporation and Work Plan revision continued through the month of April.

OU3 WORK PLAN ADDENDUM

WORK PLAN

| SCOPE | RECEIVE FROM EPA | SUBMIT TO EPA FINAL |
|---|--------------------------|---------------------------|
| The work plan/appendices will include an initial evaluation of Operable Unit 3 (e.g., conceptual models, waste/contaminant quantities), a work plan rationale (e.g., data requirements, SAP approach) and specific Operable Unit 3 RI/FS tasks. | 07/02/92 C 07/02/92 F | 07/30/92 C 07/30/92 F |

C = Consent Agreement Date

F = Forecast Complete

A = Actual

3.2 Issues/Corrective Actions

None to report.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

3.3 Planned Activities for May 1992

Continue review/revision of OU3 RI/FS Work Plan Addendum and Appendices.

Submit revised draft to DOE-HQ on May 15, 1992 for approval to submit for U.S. EPA review by June 2, 1992.

Incorporate final DOE-HQ comments and prepare revised draft Work Plan Addendum for U.S. EPA and Ohio EPA review.

| ACTIVITY DESCRIPTION | LATE START | LATE FINISH | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|--|------------|-------------|------|------|------|------|------|------|------|------|
| SCOPING OF OPER. UNIT 3 | 1JUL91A | 28AUG92 | | | | | | | | |
| SUBMIT OJ3 WORK PLAN TO DOE | | 3APR92A | | | | | | | | |
| DOE DELIVER COMMENTS ON OJ3 WORK PLAN | | 4MAY92 | | | | | | | | |
| SUBMIT OJ3 WORK PLAN TO EPA | | 2JUN92 | | | | | | | | |
| RECEIVE OJ3 WORK PLAN COMMENTS FROM EPA | | 2JUL92 | | | | | | | | |
| SUBMIT FINAL OJ3 WORK PLAN ADDENDUM TO EPA | | 30JUL92 | | | | | | | | |
| OPERABLE UNIT 3 FIELD RELATED ACTIVITIES | 6JUL92 | 5DEC94 | | | | | | | | |
| COMPLETION OF OJ3 FIELD WORK | | 5DEC94 | | | | | | | | |
| INITIAL FIELD ACTIVITIES | 1JUN92 | 15FEB93 | | | | | | | | |
| TEAM *A* | 31DEC92 | 25MAY94 | | | | | | | | |
| TEAM *B* | 31DEC92 | 24OCT94 | | | | | | | | |
| TEAM *C* | 31DEC92 | 1NOV94 | | | | | | | | |
| TEAM *D* | 31DEC92 | 9AUG94 | | | | | | | | |
| SAFE SHUTDOWN BY WEMCO | 1JUL91A | 11JAN99 | | | | | | | | |
| OJ3 BL RISK ASSESSMENT | 25AUG93 | 24MAY95 | | | | | | | | |
| OJ3 TREATABILITY STUDIES | 15JUN92 | 20JUN95 | | | | | | | | |
| SUBMIT OJ3 RI TO DOE/WEMCO | | 15NOV95 | | | | | | | | |
| DOE/WEMCO DELIVER OJ3 RI COMMENTS | | 14DEC95 | | | | | | | | |
| SUBMIT OJ3 RI TO EM-1 | | 12JAN96 | | | | | | | | |
| SUBMIT OJ3 DRAFT RI REPORT TO EPA | | 13MAR96 | | | | | | | | |
| RECEIVE EPA OJ3 RI RPT COMMENTS | | 13MAY96 | | | | | | | | |
| SUBMIT D FINAL OJ3 RI RPT TO EPA | | 10JUN96 | | | | | | | | |
| OJ3 REMEDIAL INVESTIGATION REPORT PREP | 28APR93 | 15NOV95 | | | | | | | | |
| DOE OJ3 RI REVIEW/REVISE/APPROVE | 16NOV95 | 13MAR96 | | | | | | | | |
| EPA OJ3 RI REVIEW/REVISE/APPROVE | 14MAR96 | 9JUL96 | | | | | | | | |
| PRINT AND DISTRIBUTE FINAL OJ3 RI REPORT | 10JUL96 | 6AUG96 | | | | | | | | |
| SUBMIT DRAFT OJ3 ISA TO DOE/WEMCO | | 29NOV94 | | | | | | | | |
| DOE/WEMCO DELIVER OJ3 ISA COMMENTS | | 28DEC94 | | | | | | | | |
| SUBMIT OJ3 ISA TO EM-1 | | 26JAN95 | | | | | | | | |
| SUBMIT OJ3 ISA TO EPA | | 27MAR95 | | | | | | | | |
| RECEIVE EPA OJ3 ISA COMMENTS | | 8NOV95 | | | | | | | | |
| SUBMIT D FINAL OJ3 ISA TO EPA | | 6DEC95 | | | | | | | | |
| OJ3 INITIAL SCREENING OF ALTERNATIVES RPT PREP | 22MAR94 | 29NOV94 | | | | | | | | |
| DOE OJ3 ISA REVIEW/REVISE/APPROVE | 30NOV94 | 27MAR95 | | | | | | | | |

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|--------------------------|--|
| Activity Bar/Early Dates | |
| Critical Activity | |
| Progress Bar | |

Project Start : 10CT90
Project Finish: 11JAN99

RI/FS PROGRAM CURRENT
FERNALD ENVIRONMENTAL MGMT. PROJECT
RI/FS LEVEL III BAR CHART

Sheet 1 of 2
Date: 26APR92
FILE DATE: 15MAY92

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|-------------|-------------|
| Prepared by | MI/IT Corp. |
| Date | |
| Revision | |
| Checked | |
| Approved | |

| ACTIVITY DESCRIPTION | LATE START | LATE FINISH | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|------------|-------------|------|------|------|------|------|------|------|------|
| EPA OJ3 ISA REVIEW/REVISE/APPROVE | 28MAR95 | 4JAN96 | | | | | | | | |
| PRINT AND DISTRIBUTE FINAL OJ3 ISA REPORT | 5JAN96 | 1FEB96 | | | | | | | | |
| SUBMIT OJ3 FS/PP TO DOE/MEMCO | | 11APR96 | | | | | | | | |
| DOE/MEMCO DELIVER OJ3 FS/PP COMMENTS | | 10MAY96 | | | | | | | | |
| SUBMIT OJ3 FS/PP TO EM-1 | | 7JUN96 | | | | | | | | |
| SUBMIT OJ3 FS/PP TO EPA | | 6AUG96 | | | | | | | | |
| RECEIVE EPA OJ3 FS RPT/PP COMMENTS | 4OCT96 | | | | | | | | | |
| SUBMIT D FINAL OJ3 FS RPT/PP TO EPA | | 1NOV96 | | | | | | | | |
| OJ3 FEASIBILITY STUDY/PROPOSED PLAN PREP | 25MAY95 | 11APR96 | | | | | | | | |
| DOE OJ3 FS/PP REVIEW/REVISE/APPROVE | 12APR96 | 6AUG96 | | | | | | | | |
| EPA OJ3 FS/PP REVIEW/REVISE/APPROVE | 7AUG96 | 2DEC96 | | | | | | | | |
| PRINT AND DISTRIBUTE FINAL OJ3 FS/PP | 3DEC96 | 30DEC96 | | | | | | | | |
| OJ3 DRAFT NOTICE OF AVAILABILITY (NOA) | 27AUG96 | 20JAN97 | | | | | | | | |
| OJ3 PUBLIC COMMENT PERIOD | 31DEC96 | 3APR97 | | | | | | | | |
| SUBMIT OJ3 DRAFT ROD TO DOE/MEMCO | | 5FEB97 | | | | | | | | |
| DOE/MEMCO DELIVER OJ3 DRAFT ROD COMMENTS | | 6MAR97 | | | | | | | | |
| SUBMIT OJ3 DRAFT ROD TO EM-1 | | 3APR97 | | | | | | | | |
| SUBMIT OJ3 DRAFT ROD TO EPA | | 2MAY97 | | | | | | | | |
| RECEIVE EPA OJ3 DRAFT ROD COMMENTS | 3JUN97 | | | | | | | | | |
| SUBMIT D FINAL OJ3 ROD TO EPA | | 1JUL97 | | | | | | | | |
| OJ3 DRAFT ROD PREPARATION | 2DEC96 | 5FEB97 | | | | | | | | |
| DOE OJ3 DRAFT ROD REVIEW/REVISE/APPROVE | 5FEB97 | 2MAY97 | | | | | | | | |

Activity Bar/Ready Dates
 Critical Activity
 Progress Bar

Project Start: 10CT90
 Project Finish: 11JAN99

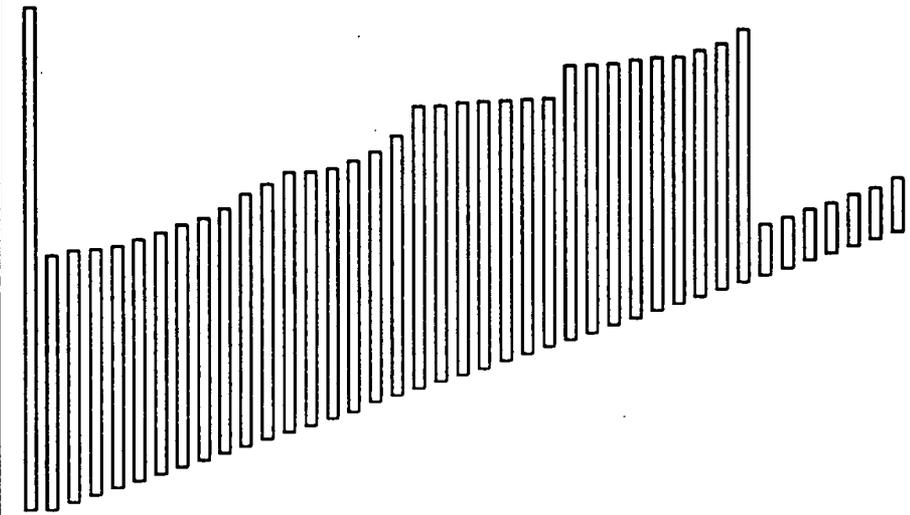
RI/FS PROGRAM CURRENT
 FERNALD ENVIRONMENTAL MGMT. PROJECT
 RI/FS LEVEL III BAR CHART

Sheet 2 of 2
 Date Date: 26APR97
 Plot Date: 10MAY97

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| Prepared by: M/J/T/esp. | Checked: J/mon/96 |
| Date: _____ | _____ |
| Revision: _____ | _____ |
| _____ | _____ |
| _____ | _____ |

| ACTIVITY ID | ACTIVITY DESCRIPTION | ORIG DUR | EARLY START | EARLY FINISH |
|-------------|--|----------|-------------|--------------|
| 320302005 | INITIAL FIELD ACTIVITIES | 180 | 17JUN92 | 15FEB93 |
| 320302000 | COMPLETION OF O&D FIELD WORK | 0 | | 5DEC94 |
| TEAM 'A' | | | | |
| 320302009 | LABORATORY BUILDING SAMPLING | 356 | 31DEC92 | 25MAY94 |
| 320302010 | MAIN MAINTENANCE BUILDING | 180 | 31DEC92 | 15SEP93 |
| 320302011 | PILOT PLANT DISROCCATOR SHELTER | 176 | 8JAN93 | 20SEP93 |
| 320302012 | WASTE OIL DECANT SHELTER | 174 | 15JAN93 | 21SEP93 |
| 320302013 | PLANT 6 ELECTROSTATIC PRECIPITATOR (NORTH) | 172 | 22JAN93 | 24SEP93 |
| 320302014 | DISCONTAMINATION BUILDING | 172 | 29JAN93 | 10CT93 |
| 320302015 | INCINERATOR BUILDING | 172 | 12FEB93 | 15OCT93 |
| 320302016 | BLM RECYCLING PIT/ELEVATOR | 172 | 19FEB93 | 22OCT93 |
| 320302017 | PILOT PLANT MAINTENANCE BUILDING | 173 | 26FEB93 | 1NOV93 |
| 320302018 | BIK TO FOUR REDUCTION FACILITY #1 | 177 | 5MAR93 | 15NOV93 |
| 320302019 | PILOT PLANT ANNEX | 180 | 12MAR93 | 25NOV93 |
| 320302020 | PILOT PLANT WEST SIDE | 181 | 19MAR93 | 6DEC93 |
| 320302021 | DRUM RECONDITIONING BUILDING | 177 | 26MAR93 | 7DEC93 |
| 320302022 | REFRIGERATION BUILDING | 175 | 2APR93 | 10DEC93 |
| 320302023 | HEAVY EQUIPMENT BUILDING | 175 | 9APR93 | 17DEC93 |
| 320302024 | DIGESTOR & CONTROL BUILDING | 175 | 17APR93 | 27DEC93 |
| 320302025 | SPECIAL PRODUCTS PLANT | 180 | 26APR93 | 11JAN94 |
| 320302026 | METALS FABRICATION PLANT | 197 | 3MAY93 | 10FEB94 |
| 320302027 | MAIN ELECTRICAL SUBSTATION | 193 | 10MAY93 | 11FEB94 |
| 320302028 | MAIN ELECTRICAL SWITCH HOUSE | 185 | 24MAY93 | 15FEB94 |
| 320302029 | ELECTRICAL POWER CENTER BUILDING | 181 | 1JUN93 | 16FEB94 |
| 320302030 | PLANT 9 SUBSTATION | 173 | 15JUN93 | 18FEB94 |
| 320302031 | MAIN ELECTRICAL STAINER HOUSE | 191 | 22JUN93 | 23MAR94 |
| 320302032 | RAILROAD ENGINE HOUSE | 187 | 29JUN93 | 24MAR94 |
| 320302033 | MAINTENANCE BUILDING | 183 | 7JUL93 | 25MAR94 |
| 320302034 | PLANT 8 MAINTENANCE BUILDING | 177 | 21JUL93 | 31MAR94 |
| 320302035 | ENGINE HOUSE/GARAGE | 173 | 28JUL93 | 1APR94 |
| 320302036 | BULK LIME HANDLING BUILDING | 172 | 11AUG93 | 14APR94 |
| 320302037 | PREPARATION PLANT | 178 | 18AUG93 | 29APR94 |
| 320302038 | PLANT 6 SALT OIL HEAT TREAT BUILDING | 36 | 25AUG93 | 14OCT93 |
| 320302039 | PLANT 9 SUMP TREATMENT FACILITY | 36 | 1SEP93 | 21OCT93 |
| 320302040 | RAILROAD FILTER BUILDING | 37 | 9SEP93 | 29OCT93 |
| 320302041 | PLANT 9 CYLINDER BEED | 36 | 16SEP93 | 4NOV93 |
| 320302042 | TANK FARM CONTROL HOUSE | 36 | 23SEP93 | 12NOV93 |
| 320302043 | GUARD POST ON WEST END STREET | 36 | 30SEP93 | 19NOV93 |
| 320302044 | INCINERATOR SPRINKLER RISER HOUSE | 36 | 7OCT93 | 29NOV93 |

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| Date | Revision | Checked | Approved |
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Sheet 1 of 6
 Date Date: 17JUN92
 Plot Date: 12MAY92

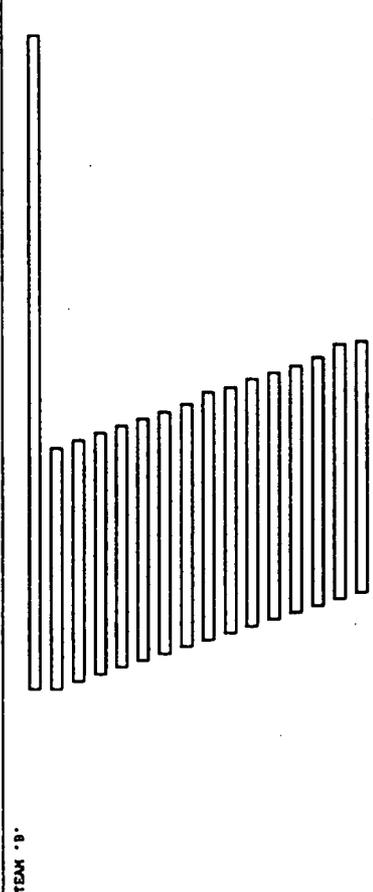
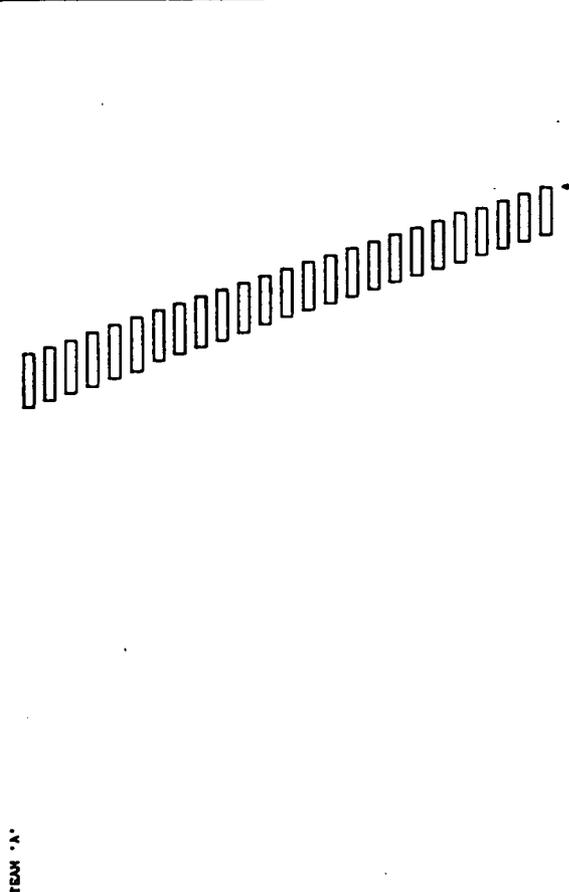
FERNALD ENVIRON. MGMT. PROJECT
 OPERABLE UNIT 3 FIELD WORK
 LEVEL IV BARCHART

Project Start: 12APR92
 Project Finish: 5DEC94

Activity Bar/Ready Below
 Critical Activity
 Progress Bar
 Primavera Systems, Inc. 1994-1999

| ACTIVITY ID | ACTIVITY DESCRIPTION | ORIG DUR | EARLY START | EARLY FINISH |
|-------------|--|----------|-------------|--------------|
| 3203602A38 | UTILITY SHED EAST OF RUFT TRAILERS | 36 | 14OCT93 | 6DEC93 |
| 3203602A39 | SEWAGE LIFT STATION BUILDING | 36 | 21OCT93 | 13DEC93 |
| 3203602A40 | PLANT 5 IMOOT PICKLING | 36 | 28OCT93 | 20DEC93 |
| 3203602A41 | WEST DERBY BREAKOUT/SLAG MILLING | 36 | 4NOV93 | 28DEC93 |
| 3203602A42 | BORN SEWER LIFT STATION | 36 | 12NOV93 | 5JAN94 |
| 3203602A43 | CLEAR WELL PUMP HOUSE | 36 | 19NOV93 | 12JAN94 |
| 3203602A44 | PUMP HOUSE-HP FIRE PROTECTION | 36 | 29NOV93 | 19JAN94 |
| 3203602A45 | PUMP STATION AND POWER CENTER | 36 | 6DEC93 | 26JAN94 |
| 3203602A46 | PLANT 6 PUMP BUILDING | 36 | 13DEC93 | 2FEB94 |
| 3203602A47 | GAS METER BUILDING | 36 | 20DEC93 | 9FEB94 |
| 3203602A48 | PROPANE STORAGE | 36 | 28DEC93 | 16FEB94 |
| 3203602A49 | TRUCK SCALE | 36 | 5JAN94 | 23FEB94 |
| 3203602A50 | SCALE HOUSE AND WEIGH SCALE | 36 | 12JAN94 | 2MAR94 |
| 3203602A51 | RAILROAD SCALE HOUSE | 36 | 19JAN94 | 9MAR94 |
| 3203602A52 | CHLORINATION BUILDING | 36 | 26JAN94 | 16MAR94 |
| 3203602A53 | D & D BUILDING (UNDER CONSTRUCTION) | 36 | 2FEB94 | 23MAR94 |
| 3203602A54 | WET SALT STORAGE BIN | 36 | 9FEB94 | 30MAR94 |
| 3203602A55 | WELL HOUSE #1 | 36 | 16FEB94 | 6APR94 |
| 3203602A56 | WELL HOUSE #2 | 36 | 23FEB94 | 13APR94 |
| 3203602A57 | WELL HOUSE #3 | 36 | 29MAR94 | 20APR94 |
| 3203602A58 | #1X TO FOUR REDUCTION FACILITY #2 | 36 | 9APR94 | 29APR94 |
| 3203602A62 | M.H. #113/SEPT. LINE/SAMPLING BUILDING | 36 | 16MAR94 | 4MAY94 |
| 3203602A63 | RECEIVING/INCOMING MATERIAL INSPECTION | 36 | 23MAY94 | 11MAY94 |
| 3203602A64 | WATER PLANT | 36 | 30MAR94 | 18MAY94 |
| 3203602A65 | U.V. DISINFECTION BUILDING | 36 | 6APR94 | 25MAY94 |
| 3203601A60 | COMPLETION OF TEAM A FIELD WORK | 0 | | 25MAY94 |
| 3203602B00 | TEAM 'B' | 666 | 31DEC92 | 24OCT94 |
| 3203602B01 | TRICKLING FILTERS | 172 | 31DEC92 | 25EP93 |
| 3203602B02 | METAL DISSOLVER BUILDING | 172 | 8JAN93 | 105EP93 |
| 3203602B03 | UNDERGROUND STORAGE TANK | 172 | 15JAN93 | 115EP93 |
| 3203602B04 | WTS STORAGE AND PUMP HOUSE | 172 | 22JAN93 | 245EP93 |
| 3203602B05 | PLANT 6 ELECTROSTATIC PRECIPITATOR | 172 | 29JAN93 | 1OCT93 |
| 3203602B06 | ELECTROSTATIC PRECIPITATOR | 172 | 5FEB93 | 6OCT93 |
| 3203602B07 | RUFT ENGINEERING BUILDING | 172 | 12FEB93 | 15OCT93 |
| 3203602B06 | OGONE BUILDING | 175 | 19FEB93 | 27OCT93 |
| 3203602B08 | MARSHM FETTER | 173 | 26FEB93 | 1NOV93 |
| 3203602B09 | COMBINED RAFFINATE TANKS | 174 | 5MAR93 | 9NOV93 |
| 3203602B10 | SLAG RECYCLING BUILDING | 172 | 12MAR93 | 15NOV93 |
| 3203602B11 | PUMP PUMP HOUSE | 172 | 19MAR93 | 22NOV93 |
| 3203602B12 | METHANOL TANK | 172 | 26MAR93 | 30NOV93 |
| 3203602B13 | SERVICE BUILDING | 176 | 2APR93 | 13DEC93 |
| 3203602B14 | HEALTH & SAFETY BUILDING | 174 | 9APR93 | 16DEC93 |

1992 J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N 1993 J J A S O N D J F M A M J J A S O N



Sheet 2 of 6

FERNALD ENVIRON. MGMT. PROJECT
OPERABLE UNIT 3 FIELD WORK
LEVEL IV BARCHART

Project Start: 24APR92
Project Finish: 5DEC94

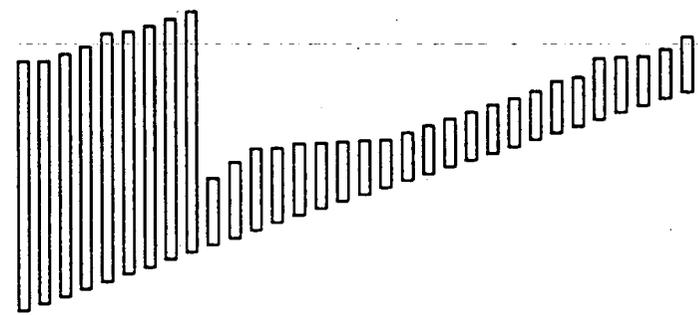
Activity Bar/Key:
 Activity Bar/Key Date
 Critical Activity
 Progress Bar

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| DATA | Revision | Checked | Approved |
| | | | |
| | | | |

Date Date: 120492
File Date: 120492

| ACTIVITY ID | DESCRIPTION | ORIG DUR | EARLY START | EARLY FINISH |
|-------------|------------------------------------|----------|-------------|--------------|
| 3203692D34 | KC-2 WAREHOUSE | 178 | 11OCT93 | 21JUN94 |
| 3203692D35 | DRUM STORAGE BUILDING | 173 | 18OCT93 | 21JUN94 |
| 3203692D36 | PLANT 3 WAREHOUSE | 173 | 25OCT93 | 28JUN94 |
| 3203692D37 | CP STORAGE WAREHOUSE | 173 | 1NOV93 | 5OUL94 |
| 3203692D38 | GENERAL IN-PROCESS WAREHOUSE | 177 | 8NOV93 | 18JUL94 |
| 3203692D39 | PLANT 5 WAREHOUSE | 174 | 16NOV93 | 20JUL94 |
| 3203692D40 | PLANT 3 WAREHOUSE | 173 | 21NOV93 | 26JUL94 |
| 3203692D41 | COAL PILE MAKEOFF BASIN | 173 | 1DEC93 | 2AUG94 |
| 3203692D42 | SEWAGE TREATMENT PLANT INCINERATOR | 173 | 8DEC93 | 9AUG94 |
| 3203692D43 | PROCESS TRAILERS | 47 | 15DEC93 | 21FEB94 |
| 3203692D44 | MOBILE CONTAINERS (SEA-LAND) | 54 | 22DEC93 | 9MAR94 |
| 3203692D45 | NON-PROCESS TRAILERS | 59 | 30DEC93 | 23MAR94 |
| 3203692D46 | DRUM CONVERTOR SHELTER | 55 | 7JAN94 | 24MAR94 |
| 3203692D47 | MAGNESIUM STORAGE BUILDING | 52 | 14JAN94 | 28MAR94 |
| 3203692D48 | BUILDING 32 COVERED LOADING DOCK | 44 | 21JAN94 | 30MAR94 |
| 3203692D49 | PLANT 5 FILTER BUILDING | 40 | 6FEB94 | 31MAR94 |
| 3203692D50 | PLANT 3 COVERED STORAGE PAD | 36 | 11FEB94 | 1APR94 |
| 3203692D51 | STORAGE SHED (HEAT) | 36 | 18FEB94 | 8APR94 |
| 3203692D52 | PLANT 7 OVERHEAD CRANE | 36 | 6MAR94 | 22APR94 |
| 3203692D53 | LAMBER STORAGE BUILDING | 36 | 11MAR94 | 29APR94 |
| 3203692D54 | CYLINDER STORAGE BUILDING | 36 | 19MAR94 | 6MAY94 |
| 3203692D55 | CYLINDER FILLING STATION | 36 | 25MAR94 | 13MAY94 |
| 3203692D56 | BUILDING 14 BOC GENERATOR SET | 36 | 1APR94 | 20MAY94 |
| 3203692D57 | STORM WATER RETENTION BASIN | 37 | 8APR94 | 30MAY94 |
| 3203692D58 | METEOROLOGICAL TOWER | 36 | 15APR94 | 3JUN94 |
| 3203692D59 | UTILITY LINES | 44 | 22APR94 | 22JUN94 |
| 3203692D60 | TENSION SUPPORT STRUCTURE 13 | 40 | 29APR94 | 23JUN94 |
| 3203692D61 | TENSION SUPPORT STRUCTURE 12 | 36 | 6MAY94 | 24JUN94 |
| 3203692D62 | TENSION SUPPORT STRUCTURE 11 | 36 | 13MAY94 | 1JUL94 |
| 3203692D63 | PIPE BRIDGES | 40 | 20MAY94 | 16JUL94 |
| 3203692D64 | COMPLETION OF TEAM D FIELD WORK | 0 | | 9AUG94 |

1992 J J A S O I N D R J F H A H I J J A S O N D J F F I H A R J J A S O N
 1993 J J A S O I N D R J F H A H I J J A S O N D J F F I H A R J J A S O N
 1994 J J A S O I N D R J F H A H I J J A S O N D J F F I H A R J J A S O N



TEAM 'D'

Sheet 6 of 6

FERNALD ENVIRON. MGMT. PROJECT
OPERABLE UNIT 3 FIELD WORK
LEVEL IV BARCHART

Project Start : 24APR92
 Project Finish: 5DEC94

Activity Bar/Bar/Bar Date
 Critical Activity
 Progress Bar

Date Date: 1JUN92
 Plot Date: 12MAY92

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

4.0 Operable Unit 4

Operable Unit 4 as defined in the Amended Consent Agreement consists of Silos 1, 2, 3, and 4, the silo berms, the Decant Tank System, and soil within the operable unit boundary.

4.1 Field Investigation

4.1.1 Slant Borings

Scope:

Five slant or angled borings were advanced beneath Silos 1 and 2 and the decant sump tank.

Status:

All sampling activities and laboratory analysis of the samples have been completed. All analytical results have been validated and entered into the RI/FS database.

Issues/Corrective Actions:

None to report.

4.1.2 Vertical Borings:

Scope:

Four vertical borings were advanced into the earthen berms of Silos 1 and 2 to identify contaminants transported from the silos in the area of the slurry transfer decant ports.

Status:

All sampling activities and laboratory analysis of the samples have been completed. Data validation and database entry are complete.

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4.1.2 Vertical Borings:

Issues:

During examination of the sample validation results, it was determined that three samples from three of the four vertical borings were inadvertently not collected during the initial sampling operations. The three missed samples were to be analyzed for full radiological parameters. The missed samples were to be collected at the 10-foot interval of the first third of Borings 1620, 1622, and 1623.

Corrective Actions:

Samples were retrieved from archive storage and submitted for analysis of the missed parameters at the indicated intervals during the month. No schedule impacts are anticipated based on expedited laboratory requests.

4.1.3 Silos 1 and 2 Contents:

Scope:

Silos 1 and 2 contents were sampled from three of the four manways at each silo. The contract laboratory completed the analysis for the Silos 1 and 2 samples in January 1992.

Status:

All sampling activities and laboratory analyses of the samples have been completed. Data validation is complete. Evaluation of validation results and database entry have been completed.

Issues/Corrective Actions:

None to report.

4.2 Treatability Studies

Scope:

The purpose of a treatability study is to provide additional information to support the FS and subsequent remedy selection for Operable Unit 4. There are two separate work plans/studies to support the Operable Unit 4 FS. One study considers cement stabilization of Silos 1, 2, and 3 material and chemical extraction, leachate stabilization, and leachate purification of Silos 1 and 2 material. The second study considers the vitrification of Silos 1, 2, and 3 material.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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4.2 Treatability Studies (Continued)

The Treatability Study Work Plan (for cementation and chemical extraction) will demonstrate whether stabilization can achieve a desired level of material strength, provide information to help determine the effectiveness of chemical extraction, and to provide data for use in fate and transport modeling. The study is composed of two parts, preliminary phase and advanced phase studies. The preliminary phase studies will determine the potential reagents and conditions for stabilization and/or extraction on composites of the silo material. The advanced phase will evaluate the material variability by testing formulations and/or extraction on the top, middle, and bottom layers from each silo.

The Treatability Study Work Plan for the Vitrification of Residues from Silos 1, 2, and 3 considers vitrification of silo material, determines quantity and composition of the off-gas generated during vitrification, radon emanation rate from the vitrified waste, and the leachability of the vitrified waste.

Status:

Stabilization and Chemical Extraction testing supporting the Treatability Study continued in April.

Stabilization and Chemical Extraction

Silos 1 and 2 - Preliminary Phase I - Stage 3 - The three specimens per silo that were poured during March have completed their 28-day curing stage. MTCLP extractions have been performed and the resulting samples are currently under analysis.

Silo 3 - Preliminary Phase I - Stage 3 - The six specimens in this stage have completed their curing stage and analyses is complete. The data is currently being evaluated.

Chemical Extraction tests - Washing of the extracted solids from the Advanced Phase leaching was completed during April. These solids are currently being analyzed for TCLP and radionuclide content. The leachate and wash water are also being analyzed. Concurrently, the Preliminary Phase I of precipitation of metal in the leachate solution began in April.

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4.2 Treatability Studies (Continued)

Vitrification Treatability Tests

The Vitrification Treatability Study Work Plan was approved with comments. The determination of the physical properties for the K-65 residue and the metal oxide material was completed. The chemical analyses for the K-65 residue and the metal oxide material were also completed. The radon emanation from the untreated K-65 residue was also measured, completing the laboratory screening tests. Results of the laboratory screening analyses will be used to determine the formulations for the benchscale vitrification melts.

4.3 Remedial Investigation Report

Scope:

The purpose of the RI is to provide a summary of the field investigations and to support the FS by defining the nature and extent of the contaminants in the Operable Unit 4 study area; estimating the volume of contaminated media and materials; and providing a baseline risk assessment, which establishes remedial action objectives.

Status:

Operable Unit 4 RI activities in April included continued gathering and reviewing of available field and analytical data; evaluating sampling performed and data qualifiers to determine if current level of characterization for Operable Unit 4 area and waste is sufficient; continued revisions to the previous draft of the RI Report; and continued model revisions for the risk assessment.

Issues:

Because of the delayed receipt of the validated field and analytical data, the internal (early finish) RI scheduled activities have slipped six weeks.

Corrective Action:

A recovery plan has been formulated and will be initiated pending FEMP site approval.

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Period Ending April 30, 1992

4.3 Remedial Investigation Report (Continued)

OU4 REMEDIAL INVESTIGATION REPORT

PRIMARY

| SCOPE | SUBMIT TO EPA | RECEIVE FROM EPA | SUBMIT TO EPA FINAL |
|--|--------------------------|--------------------------|---------------------------|
| Details the nature and extent of contaminants in the OU4 study area. Estimates the volume of contaminated media and materials. Provides a baseline risk assessment and establishes remedial action objectives. | 04/19/93 C 01/12/93 F | 06/18/93 C 03/12/93 F | 07/18/93 C 04/09/93 F |

C = Consent Agreement Date

F = Forecast Complete

A = Actual

Activities continued including gathering and reviewing field and analytical data, revising previous drafts of the RI, and revising risk assessment models.

4.4 Planned Activities for May, 1992

Continue revisions to the RI Report/Baseline Risk Assessment.

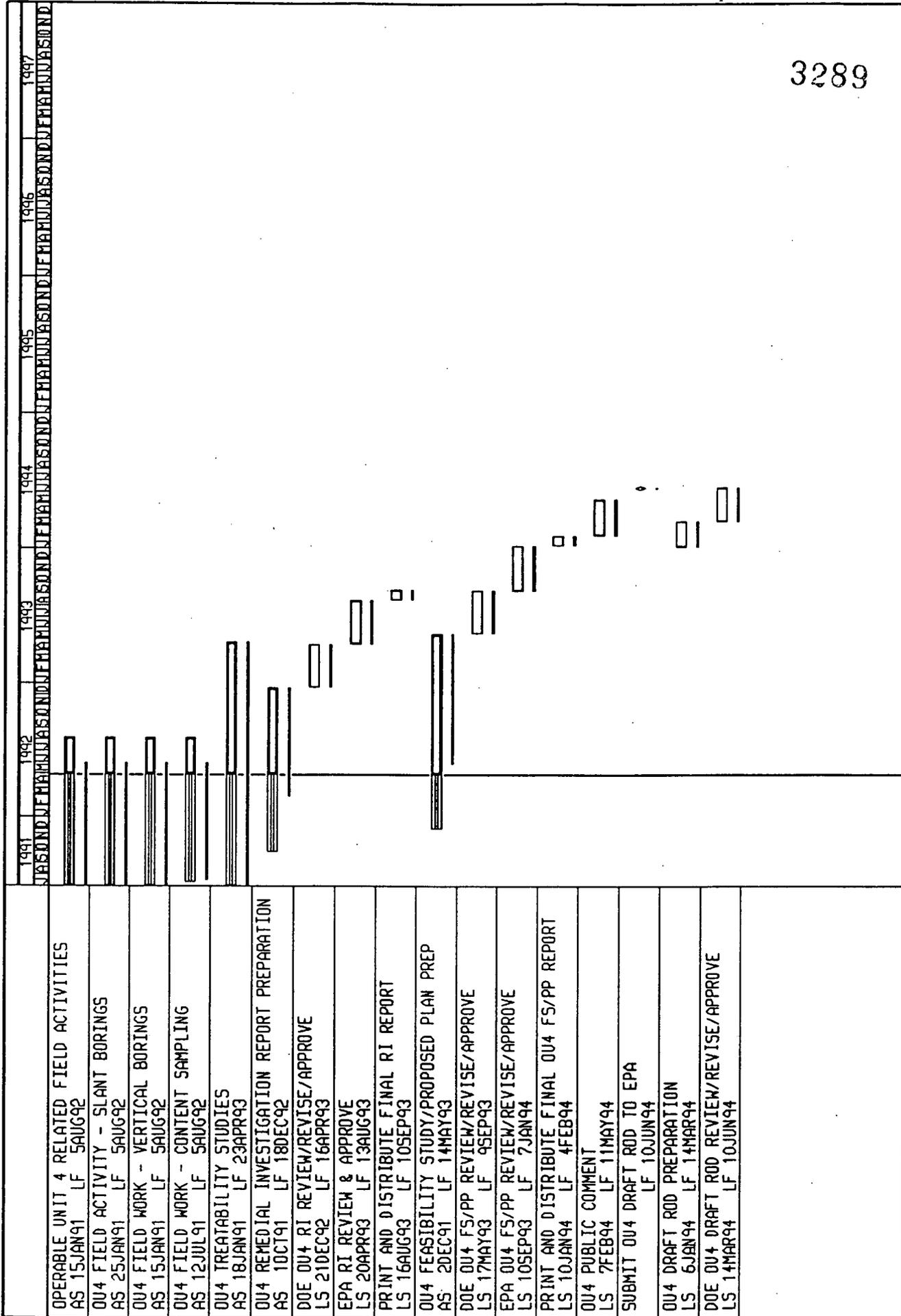
Cement stabilization treatability testing will continue with the evaluation of data from the Preliminary Phase I -Stage 3 analyses and the initiation of the Advanced Phases of stabilization for Silos 1, 2 and 3.

Chemical Extraction treatability testing will continue. Advanced Phase - leaching analyses and Preliminary Phase I - precipitation will both continue.

Vitrification - The fabrication and installation of the benchscale testing system will be initiated. Small sample melts for Silo 3 will be initiated. Glass formulations will be determined during May.

The revision of alternatives in the Feasibility Study will be initiated during May.

Continue the laboratory analysis of the radiological parameters for the samples retrieved from archived storage for the task identified in Section 4.1.2.



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| | | | | |
|---|---|--|---|---|
| Activity Bar/Late Dates Critical Activity Progress Bar Target dates as of 10CT90 | Project Start : 10CT90 Project Finish: 11JAN94 | Sheet 1 of 1 | | Prepared by ASI/IT Corp. |
| | | RI/FS PROGRAM CURRENT FERNALD ENVIRONMENTAL MGMT. PROJECT FEMP RI/FS OU4 CONSENT AGMT (LATE) | Date Revision Checked Approved | Data Date: 26APR92 Plot Date: 5MAY92 |

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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PROGRESS REPORT**

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5.0 Operable Unit 5

Operable Unit 5, as defined in the Amended Consent Agreement, includes groundwater (including site-wide perched groundwater), surface water, soil not included in the definitions of Operable Units 1-4, sediments, flora, and fauna.

5.1 Field Investigation

5.1.1 Paddy's Run South

Scope:

This investigation consists of the installation of twelve 2000-series wells along Paddy's Run, south of the FEMP, with the contingency to install twelve 3000-series wells, sample the wells monthly for one year, perform stream gauge and stream infiltration measurements, and perform surface water sampling.

Status:

The monthly groundwater sampling of all monitoring wells within the Paddy's Run South investigation was previously completed in February. The use of wells installed for this program in the long-term environmental monitoring program is still being evaluated.

Issues:

Laboratory analysis for total uranium was received for Well Location 0552. The total uranium for Well 2552 exceeded the limits previously established.

Corrective Actions:

A well (3552) was installed and developed to further investigate the elevated uranium result.

5.1.2 Facilities Testing

Scope:

This investigation consists of systematic and focused borings within the FEMP production area and additional suspect areas. Piezometers have been installed in those borings in which water was encountered.

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PROGRESS REPORT**

Period Ending April 30, 1992

5.1.2 Facilities Testing (Continued)

Status:

Complete.

Issues/Corrective Actions:

None to report.

5.1.3 31-Well Program

Scope:

This investigation consists of defining the limits of uranium plumes in the southern area of the FEMP.

Status:

All sampling activities associated with this task have been completed; final laboratory analysis for the collected samples is in progress.

Issues/Corrective Actions:

None to report.

5.1.4 8-RCRA Well Program

Scope:

Eight wells were installed to meet RCRA and RI/FS requirements in and around the FEMP waste storage area.

Status:

Awaiting completion of the laboratory analysis on the second round of groundwater sampling performed on Well 1646.

Issues/Corrective Actions:

None to report.

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PROGRESS REPORT**

Period Ending April 30, 1992

5.1.5 Miscellaneous Additional Wells Program

Scope:

Sixteen additional wells are being installed to fill data gaps defined through recent sampling activities.

Status:

A revised work plan incorporating the final comment resolution was prepared and submitted for approval.

Installation of all planned wells under this program is complete. The first round of groundwater sampling has been completed. Laboratory results for total dissolved uranium concentrations from the first round of groundwater sampling are being awaited to determine if the contingency wells are required.

The following wells have been installed and/or developed and sampled (total dissolved uranium concentrations are shown where available):

- Well 2421 - Installation complete. Developed and completed first and second groundwater sampling rounds.
- Well 2398 - Installation complete. Developed and completed first and second groundwater sampling rounds. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 3.7 $\mu\text{g}/\ell$ in the initial sample.
- Well 2399 - Installation complete. Developed and completed first and second groundwater sampling rounds. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 2.4 $\mu\text{g}/\ell$ in the initial sample.
- Well 3421 - Installation complete. Developed and completed first and second groundwater sampling rounds.
- Well 2171 - Installation complete of the replacement well for Well 2419. Developed and completed first groundwater sampling round. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 0.7 $\mu\text{g}/\ell$ in the initial sample.

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5.1.5 Miscellaneous Additional Wells Program (continued)

- Well 2420 - Installation complete. Developed and completed first and second groundwater sampling rounds. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 9.7 $\mu\text{g}/\ell$ in the initial sample.
- Well 2400 - Installation complete. Developed and completed first and second groundwater sampling rounds. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 1.6 $\mu\text{g}/\ell$ in the initial sample.
- Well 2402 - Installation complete. Developed and completed first groundwater sampling round. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 27 $\mu\text{g}/\ell$ in the initial sample. Contingency Well 3402 has been added to the scope of this task as a result of the uranium concentration in Well 2402.
- Well 2679 - Installation complete. Developed and completed first and second groundwater sampling rounds.
- Well 3678 - Installation complete. Developed and completed first groundwater sampling round.
- Well 3679 - Installation complete. Developed and completed first groundwater sampling round.
- Well 2423 - Installation complete. Developed and completed first groundwater sampling round.
- Well 3423 - Installation complete. Developed and completed first groundwater sampling round.
- Well 2417 - Installation complete. Developed and completed first groundwater sampling round. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 0.9 $\mu\text{g}/\ell$ in the initial sample.
- Well 3402 - Installation complete. Developed and completed first groundwater sampling round. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 0.2 $\mu\text{g}/\ell$ in the initial sample.

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Period Ending April 30, 1992

5.1.5 Miscellaneous Additional Wells Program (continued)

Issues/Corrective Actions:

None to report.

5.1.6 Auger and Cable Sampling Program

Scope:

Soil and perched groundwater sampling will be conducted in the following areas under this program: the Plant 1 Pad, the Southeast Quadrant of the Production Area, the Fire Training Area, the KC-2 Warehouse Area, Scrap Metal Area and Electrical Substation, and the K-65 Slurry Line and Clearwell Line.

Status:

The addendum was transmitted to the U.S. EPA and the Ohio EPA in April 1992 for review and approval.

Issues/Corrective Actions:

None to report.

5.2 Treatability Studies

Scope:

The purpose of this study is to provide information to support the FS and subsequent remedy selection for Operable Unit 5. Specifically, the study will demonstrate the feasibility of soil washing as a remedial technology for cleaning soils in Operable Unit 5. The study incorporates a physical/chemical treatment process that initially involves the separation of a soil into different particle-size fractions. Reagent formulations in the washing solutions are used in the extraction of radionuclides, organic, and inorganic compounds from these different-size fractions. The contaminants may be separated from the wash stream into a concentrated residue for further treatment.

Status:

The U.S. EPA completed its review of the revised Treatability Study Work Plan for Operable Unit 5 and additional comments on the document were received on April 21, 1992. The document was disapproved pending the resolution of these additional comments. Several comments were also received from the Ohio EPA

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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5.2 Treatability Studies (Continued)

on April 7, 1992. Written responses to these comments have been prepared for submittal to the agencies. Resolution of the issues raised by these comments is anticipated.

Issues:

Disapproval of the Treatability Study Work Plan was received from U.S. EPA on April 21, 1992.

Corrective Actions:

Respond to U.S. EPA and Ohio EPA comments. If required, schedule a teleconference to resolve any outstanding issues.

A Notice to Proceed was issued on a portion of the treatability effort prior to U.S. EPA approval. Initial soil characterization and procurement of equipment was initiated in an effort to stay within the schedule restraints of the Consent Agreement. A Notice to Proceed may be issued on Stage I, Remedial Screening Scope of Work, to avoid further delays.

OU5 TREATABILITY STUDY WORK PLAN

WORK PLAN

| SCOPE | RECEIVE FROM EPA | SUBMIT TO EPA FINAL |
|---|--------------------------|---------------------------|
| Provides scope of treatability studies for Operable Unit 5 soil treatment technologies including lab procedures and test evaluation criteria. | 05/18/92 C 01/15/92 A | 06/05/92 C 03/04/92 A |

C = Consent Agreement Date

F = Forecast Complete

A = Actual

Work plan preparation is proceeding ahead of the Consent Agreement schedule.

5.3 Initial Screening of Alternatives

Scope:

The Initial Screening of Alternatives Report will document the initial activities of the Feasibility Study. These activities include: developing remedial action objectives; developing general response actions; identifying volumes or areas of media to which response actions might be applied; identifying and screening technologies; identifying and evaluating technology process options; assembling selected representative process options into alternatives; and performing an initial screening of the alternatives

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Period Ending April 30, 1992

5.3 Initial Screening of Alternatives (Continued)

Status:

Internal comments on the Initial Screening of Alternatives (ISA) document were received on March 13, 1992. A follow-up meeting was held on April 3, 1992 to address the significant comments and to identify comments requiring a written response. Written responses were completed for the identified comments. The document is currently being revised for submittal to DOE-HQ on June 1, 1992.

Issues/Corrective Actions:

The comments resulted in a decision to restructure the ISA. The Consent Agreement dates are not in jeopardy.

OU5 INITIAL SCREENING OF ALTERNATIVES

PRIMARY

| SCOPE | SUBMIT TO EPA | RECEIVE FROM EPA | SUBMIT TO EPA FINAL |
|--|--------------------------|--|--|
| Provides for initial evaluation against preselected criteria of candidate technologies assembled to remediate Operable Unit 5. | 04/16/93 C 07/29/92 F | 06/15/93 C 08/27/92 F 09/25/92 F | 07/15/93 C 09/28/92 F 10/23/92 F |

C = Consent Agreement Date

F = Forecast Complete

A = Actual

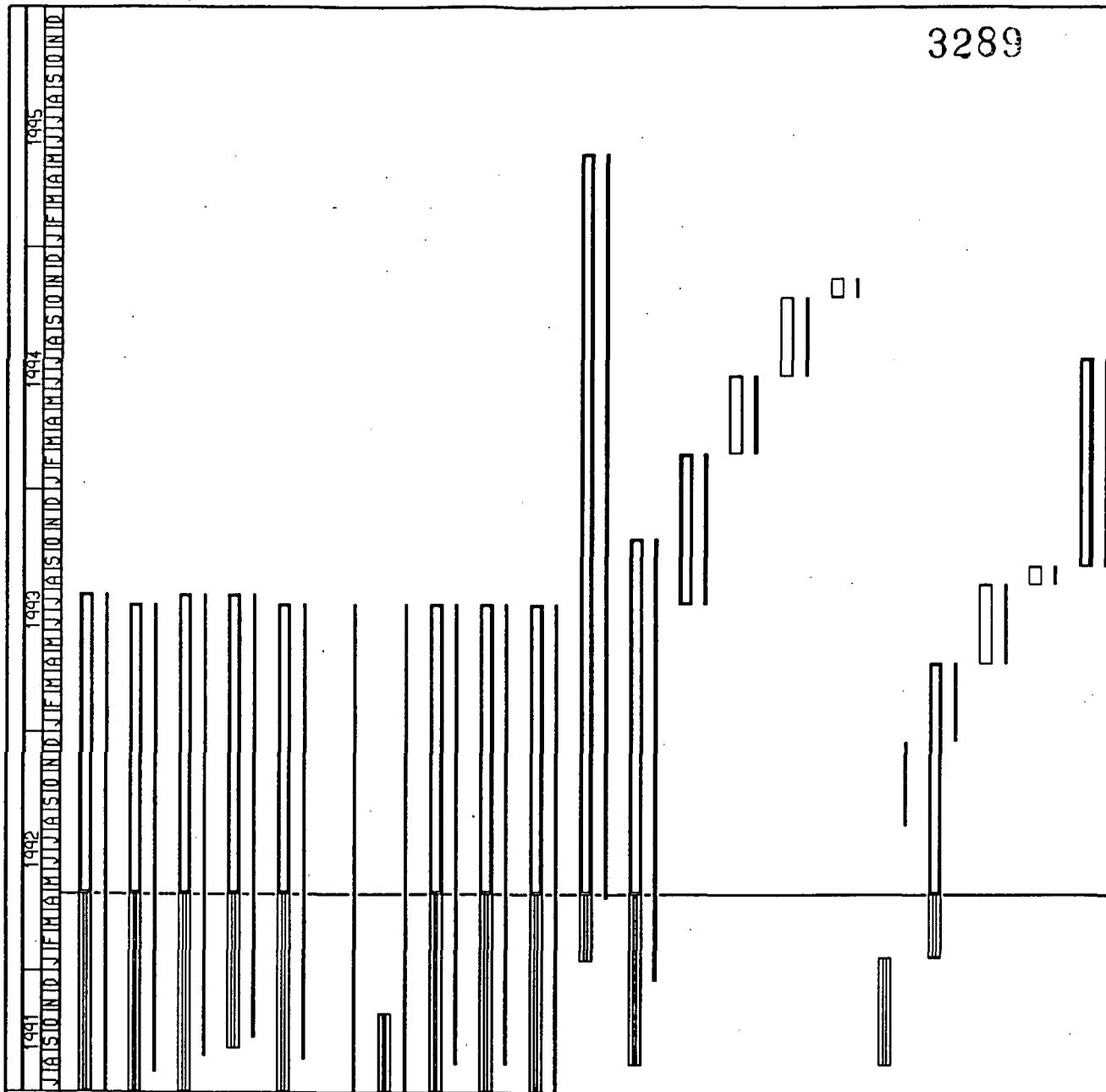
Document preparation is proceeding ahead of the Consent Agreement schedule.

5.4 Planned Activities for May 1992

Receive comments from the agencies on the OU5 Work Plan Addendum (Auger and Cable Sampling).

Resolve additional comments received on the Operable Unit 5 Treatability Study Work Plan.

Complete the second round of groundwater sampling for the Miscellaneous Additional Wells Program. Install backup wells if on-site laboratory results indicate that elevated measurements of total dissolved uranium dictate their need.



| |
|--|
| OPERABLE UNIT 5 RELATED FIELD ACTIVITIES AS 10CT90 LF 26JUL93 |
| FACILITIES TESTING AS 29MAR91 LF 12JUL93 |
| OUS FIELD WORK 31 WELL PROGRAM AS 15MAR91 LF 26JUL93 |
| OUS FIELD WORK - PADDYS RUN SAMPLING AS 6SEP91 LF 26JUL93 |
| OUS FIELD WORK - 8 RCRA WELLS AS 29MAR91 LF 12JUL93 |
| OUS FIELD WORK - 6 WELL PROGRAM AS 13JAN91 AF 15MAY91 |
| OUS FIELD WORK - WATER LEVEL MEASUREMENTS AS 10CT90 AF 28OCT91 |
| OUS FIELD WORK - AUGER SAMPLING AS 1JUL91 LF 12JUL93 |
| OUS FIELD WORK - CABLE SAMPLING AS 1JUL91 LF 12JUL93 |
| OUS FIELD WORK - MISC. ADDITIONAL WELLS AS 2JAN91 LF 12JUL93 |
| RCRA/CERCLA BACKGROUND SOIL STUDY AS 17JAN92 LF 24MAY95 |
| OUS TREATABILITY STUDIES AS 12AUG91 LF 20OCT93 |
| OUS REMEDIAL INVESTIGATION REPORT PREPARATION LS 13JUL93 LF 25FEB94 |
| DOE OUS RI REVIEW/REVISE/APPROVE LS 28FEB94 LF 23JUN94 |
| EPA OUS RI REPORT REVIEW/REVISE/APPROVE LS 24JUN94 LF 19OCT94 |
| PRINT AND DIST FINAL OUS RI REPORT LS 20OCT94 LF 16NOV94 |
| OUS INITIAL SCREENING OF ALTERNATIVES PREP AS 12AUG91 AF 23JAN92 |
| DOE OUS ISA REVIEW/REVISE/APPROVE AS 23JAN92 LF 15APR93 |
| EPA OUS ISA REVIEW/REVISE/APPROVE LS 16APR93 LF 11AUG93 |
| PRINT AND DISTRIBUTE FINAL OUS ISA REPORT LS 12AUG93 LF 8SEP93 |
| OUS FEASIBILITY STUDY/PROPOSED PLAN PREP LS 9SEP93 LF 20JUL94 |

Activity Bar/Late Dates
 Critical Activity
 Progress Bar
 Target Dates as of 10CT90

Project Start : 10CT90
 Project Finish: 11JAN95

RI/FS PROGRAM CURRENT
 FERNALD ENVIRONMENTAL MGMT. PROJECT
 FEMP RI/FS OUS CONSENT AGMT (LATE)

Sheet 1 of 2
 Prepared by AS/VT Corp.

Date: _____
 Checked: _____
 Approved: _____

Data Date: 26SEP92
 Plot Date: 5MAY92

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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6.0 Engineered Waste Management Facility

This program will evaluate the ability of the Engineered Waste Management Facility (EWMF) to manage the remedial waste generated by the operable units. The technical approach for the evaluation will be based on a program-specific sampling and analysis plan and development of an EWMF Siting Report with comprehensive analysis. The report will perform a detailed analysis of the EWMF as an on-property waste disposal/storage technology option, per OSWER Directive 9355.3-01.

6.1 Sampling and Analysis Plan

Scope:

The U.S. EPA approved the EWMF SAP as an addendum to the RI/FS Work Plan (March 1988), specifying a series of soil sample collection and analytical activities. Geotechnical, geochemical, radiological, and chemical soil samples will be collected for analysis from 18 geotechnical borings (each approximately 30 feet deep), and eight wells (five 1000-series and three 2000-series) to be installed under this program.

All surface soil samples will receive full radiological and full HSL analysis while, in general, samples collected at mid-stratum of the glacial overburden will receive total uranium and gamma spectral analysis only. The geochemical samples selected for batch sorption tests, x-ray diffraction analysis, and polarized light microscopy will be used to calculate retardation coefficients for an EWMF groundwater fate and transport model. The balance of the collected soil samples will receive geotechnical testing for preliminary engineering purposes. In addition, an on- and off-property NEPA ecological characterization program will be conducted with biota sampling performed on trees at nine on-property locations.

The resultant SAP field and laboratory data will be used to support the evaluation of criteria for a detailed analysis of the EWMF as an on-property waste disposal/storage alternative per the methodology given in "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (EPA 1988).

Status:

The original field effort has been completed. During implementation, a number of geotechnical borings encountered perched groundwater. In addition, one well set (one 1000-series, one-2000 series) encountered bedrock. Due to these developments, arrangements have been made to install five additional geotechnical borings and to relocate the well pair. The five geotechnical borings were completed in March. The well pair relocation was completed in April.

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6.1 Sampling and Analysis Plan (Continued)

The off-site ecological walk-over survey, including a preliminary search for running buffalo clover, was conducted April 13 through April 16, 1992.

Issues/Corrective Actions:

None to report.

6.2 EWMF General Siting Report

Scope:

The report will establish the feasibility of locating an EWMF at the FEMP by performing a detailed analysis of the EWMF as an on-property waste disposal/storage technology option per OSWER Directive 9355.3-01. The siting report will be divided into specific chapters characterizing all pathways and associated risks. The report will be divided into the following chapters: Geologic/Hydrogeologic, Geotechnical, Geochemical, Risk Assessment, RI/FS-EIS, and ARARs.

Status:

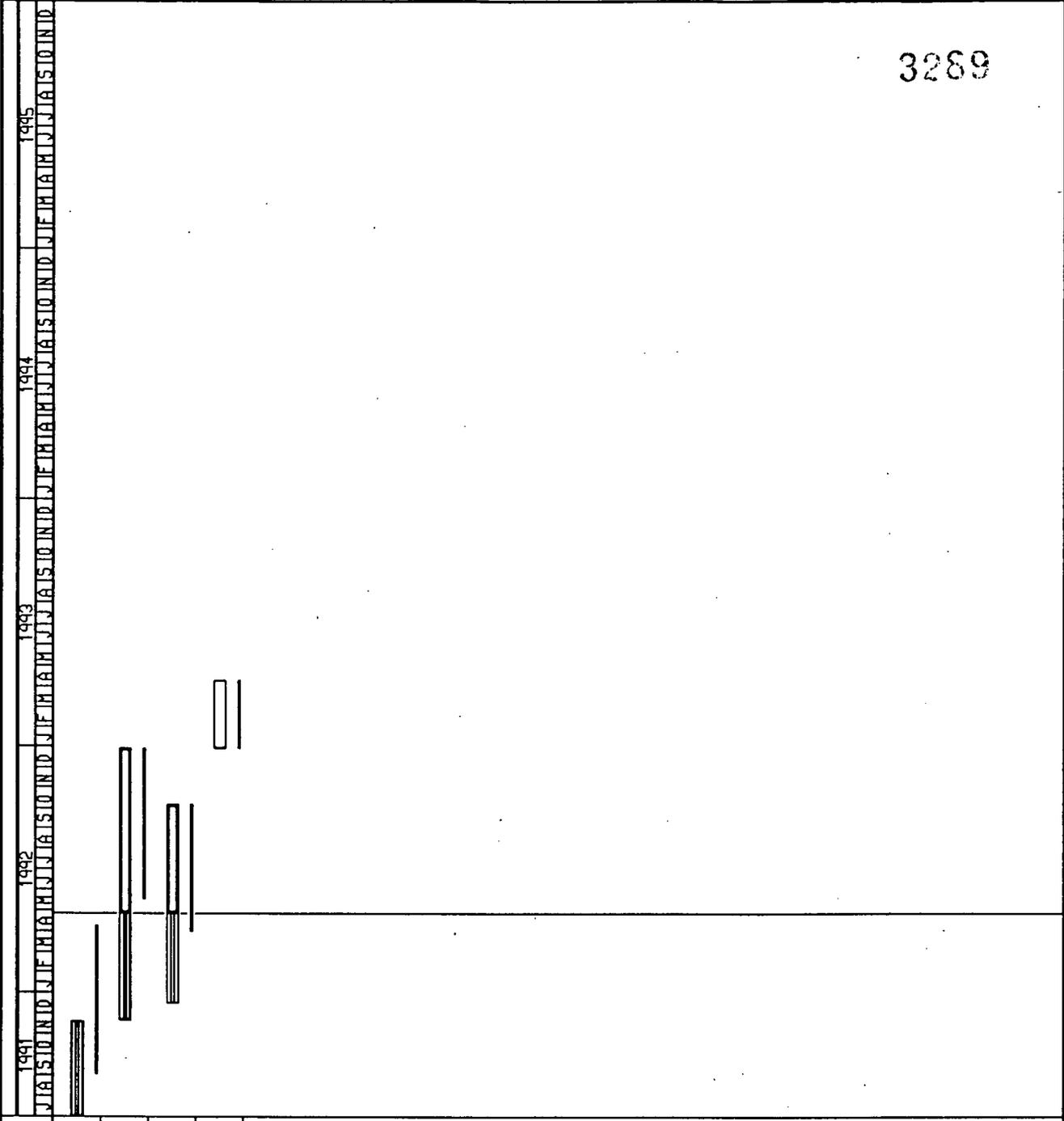
The EWMF ARARs Revision 3 were submitted to the DOE for EPA review on December 3, 1991. Comments were received from the Ohio EPA on January 6, 1992 and the U.S. EPA on January 30, 1992. The ARARs were revised and transmitted to the EPAs on March 18, 1992 as Revision 4. On April 21, 1992, comments were received from Ohio EPA on Revision 4, ARARs.

Issues/Corrective Actions:

None to report.

6.3 Planned Activities for May 1992

Radiological, chemical, and geotechnical analysis of the EWMF soil samples will continue.



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|---|---|
| Prepared by ASI/TT Corp. Date: _____ Revision: _____ Checked: _____ Approved: _____ | |
| Sheet 1 of 1 RI/FIS PROGRAM CURRENT FERNALD ENVIRONMENTAL MGMT. PROJECT FEMP RI/FIS EWMF CONSENT AGMT (LATE) | Data Date: 26APR92 Plot Date: 5MAY92 |
| Project Start : 10CT90 Project Finish: 11JAN99 | Activity Bar/Late Dates Critical Activity Progress Bar Target Dates as of 10CT90 |
| Primavera Systems, Inc. 1994-1991 | |

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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7.0 Site-Wide Characterization Report

7.1 Risk Assessment Work Plan Addendum

Scope:

The Risk Assessment Work Plan Addendum provides a detailed scheme for development and completion of a baseline risk assessment for each operable unit, a preliminary site-wide baseline risk assessment, and a remedial action risk evaluation with each operable unit FS.

The Risk Assessment Work Plan Addendum presents the specific risk assessment methodology to be followed in the RI/FS risk assessment tasks. It also establishes the scope of risk assessment work and documents the specific approach to be followed for determining whether estimated risks associated with selected remedial alternatives for the entire site are protective of human health and the environment. The addendum provides the methods, models, and parameters for development of the baseline risk assessment for each operable unit, the preliminary baseline risk assessment of the Site-Wide Characterization Report (SWCR), the remedial action risk evaluation, and the comprehensive response action risk evaluation for each operable unit FS.

Status:

DOE-FN received conditional approval, upon incorporating the additional comments, of the Risk Assessment Work Plan Addendum from U.S. EPA on March 17, 1992. Approximately 51 comments were received from U.S. EPA and Ohio EPA on the draft final Addendum. Draft responses to the comments and proposed text changes were prepared and transmitted to U.S. EPA on April 14, 1992, with a response requested within 14 days.

The revised Addendum will fulfill the requirements of the Amended Consent Agreement and presents the detailed methodology for performing risk assessment/risk management tasks in the RI/FS to resolve issues raised by U.S. EPA and Ohio EPA.

Issues:

The U.S. EPA did not respond to the draft responses within the 14 days requested. Final submission of the Addendum is on hold until responses are received.

Corrective Actions:

Ensure responses are acceptable to U.S. EPA and revise document prior to submission of Operable Unit 3 Work Plan.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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PROGRESS REPORT**

Period Ending April 30, 1992

7.2 SWCR Report Preparation

Scope:

The SWCR is a one-time summary of all FEMP site data available as of December 1, 1991. It contains the preliminary baseline risk assessment, which estimates human health and ecological risk of the FEMP from a site-wide perspective. The SWCR also provides the initial list of leading remedial alternatives for each operable unit for input into the FS cumulative response action risk evaluation.

The preliminary baseline risk assessment consists of identification of constituents of potential concern, of potential site-wide reasonable maximum exposure individuals and locations, preliminary identification of scenarios for potential future releases from the FEMP, and development of site-wide models for exposure assessment calculations.

Status:

Sections 1 through 4 of the SWCR were submitted to DOE-FN for review on April 17, along with the section on selection of leading remedial alternatives. These sections were submitted to DOE-HQ on April 30, 1992. The Preliminary Baseline Risk Assessment will be submitted to DOE-HQ May 26, completing the DOE submission for the document.

Preparation of the preliminary baseline risk assessment is continuing. Groundwater modeling has been completed and surface water and air transport modeling are underway. Preliminary compilation of constituents of concern has been completed.

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COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

SITE-WIDE CHARACTERIZATION REPORT

SECONDARY

| SCOPE | SUBMIT TO EPA | RECEIVE FROM EPA | SUBMIT TO EPA FINAL |
|--|--------------------------|--------------------------|--------------------------|
| Provides a one-time summary of site characterization data available as of 12/1/91, the Preliminary Baseline Risk Assessment and a list of the leading remedial alternatives. | 08/05/92 C 07/13/92 F | 11/20/92 C 08/12/92 F | 12/18/92 C 09/09/92 F |

C = Consent Agreement Date

F = Forecast Complete

A = Actual

Issues/Corrective Actions:

None to report.

7.3 Planned Activities for May 1992

Complete preparation of Part II (the preliminary baseline risk assessment) and submit it to DOE-FN for review.

| | | | | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1991 | | | | | | | | | | | | | | | | | |
| JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |

WORK PLAN REVISIONS

WORK PLAN ADDENDUM PREPARATION
AS 17JUN91 EF 29JUL91

DOE WORK PLAN REVIEW/REVISE/APPROVE
AS 30JUL91 EF 24SEP91

EPA WORK PLAN ADD REVIEW/REVISE/APPROVE
AS 11OCT91 EF 29APR92

PRELIMINARY SITE CHARACTERIZATION

SITEWIDE CHARACTERIZATION REPORT PREP
AS 26JUL91 EF 26MAY92

DOE REVIEW/REVISE/APPROVE SITE CHAR REPORT
AS 16APR92 EF 13JUL92

EPA REVIEW/REVISE/APPROVE SITE CHAR REPORT
ES 14JUL92 EF 9SEP92

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| | |
|-------------------------|----------|
| Prepared by: ASI/TI C&S | |
| DATA | Checked |
| REVISION | Approved |
| | |
| | |

Sheet 1 of 1

Data Date: 26APR92
Plot Date: 5MAY92

RI/FS PROGRAM CURRENT
FERNALD ENVIRONMENTAL MGMT. PROJECT
FEMP RI/FS PSC CONSENT AGMT (LATE)

Project Start: 10CT90
Project Finish: 11JAN91

-  Activity Bar/Late Dates
-  Critical Activity
-  Progress Bar
-  Target Dates as of 10CT90

Prinavera Systems, Inc. 1991-1991

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT

Period Ending April 30, 1992

8.0 Community Relations

8.1 Status

A meeting was held April 8, 1992 to discuss the procedure for obtaining public comment and issuing addenda to the Community Relations Plan (CRP) for many of the removal actions being conducted at the FEMP. This effort is being undertaken in accordance with CERCLA/SARA requirements and various EPA policy documents. The following removal actions have U.S. EPA-approved work plans and are being considered for public comment:

- Contaminated Water Beneath FEMP Buildings
- Plant 1 Pad Continuing Release
- Removal of Waste Inventories and Thorium Management
- Active Fly Ash Pile Controls
- Safe Shutdown
- Plant 1 Ore Silos
- Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator
- Collect Uncontrolled Production Area Runoff - Northeast
- Improved Storage of Soil and Debris

Due to the number of removal actions involved, the initial public comment period will be for 45 days. As more removal action work plans receive approval, including the Phase 3 removal actions submitted to U.S. EPA in January 1992, another public comment period will be initiated, as appropriate, and an addendum to the CRP will be issued for each removal action.

The revised Community Relations Plan -- Remedial Investigation/Feasibility Study and Removal Actions -- Volume III of the Work Plan was submitted to U.S. EPA and Ohio EPA on April 2, 1992.

On April 2, 1992 a Programmatic Environmental Impact Statement workshop was held at the Terrace Hilton Hotel in Cincinnati, Ohio. Approximately 50 residents attended the day session and about 20 attended the evening session.

On April 13 a Community Roundtable was held at the Executive Resource Associates' Alpha Building to discuss the FEMP Waste Shipping Program. Eleven residents from the community and ten from DOE/WEMCO attended the meeting.

8.2 Issues/Corrective Actions:

None to report.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

8.3 Planned Activities for May 1992

The Centers for Disease Control will be holding a technical workshop on the Fernald Dosimetry Reconstruction Project on May 14, 1992 at the Sheraton Hotel from 7:00 - 9:00 p.m.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

PERIOD ENDING APRIL 30, 1992

ENCLOSURE A

**WASTEWATER FLOWS AND RADIONUCLIDE
CONCENTRATIONS UNDER CA SECTION XXIII.B**

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

Introduction

The accompanying Effluent Radiation Reports provide, in accordance with the requirements of Section XXIII.B of the Consent Agreement As Amended under CERCLA Sections 120 and 106 (a), data on the daily wastewater flows, radionuclide concentrations, and loadings released to the Great Miami River and an estimate of runoff and radionuclide concentrations to Paddy's Run during April 1992.

Summary - April 1992

The total quantity of uranium discharged from the FEMP to the Great Miami River via Manhole 175 (Outfall 11000004001) was 30.90 kilograms. The average uranium concentration for the previous 12 months was 0.58 mg/l. This is 65.2 percent of the Derived Concentration Guide (DOE Order 5400.5) for ingested water.

There was no discharge from the Stormwater Retention Basin (Outfall 11000004002) to Paddy's Run via the Storm Sewer Outfall Ditch in April 1992. Based on 1.51 inches of rainfall in April 1992, the total quantity of uranium discharged to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 6.80 kilograms.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

Wastewater Flows and Radionuclide Concentrations

Facility: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398705
Cincinnati, Ohio 45239-8705

Location: 11000004001 Month: April 1992
001 Total Discharge
Manhole 175 (Effluent to the Great Miami River)

| Day | Flow (MGD) | Total Alpha (pCi/l) | Total Beta (pCi/l) | Total U (mg/l) | Total U (kgs) | Calculated Total U-238 (pCi/l) (1) |
|-------|---------------|---------------------------|--------------------------|-------------------|------------------|--|
| 1 | 0.423 | 347 | 104 | 0.54 | 0.86 | 182 |
| 2 | 1.119 | 378 | 144 | 0.48 | 2.03 | 162 |
| 3 | 0.513 | 234 | 144 | 0.42 | 0.82 | 142 |
| 4 | 0.513 | 365 | 99 | 0.54 | 1.05 | 182 |
| 5 | 0.286 | 387 | 171 | 0.52 | 0.56 | 176 |
| 6 | 0.407 | 297 | 95 | 0.40 | 0.62 | 135 |
| 7 | 0.524 | 176 | 99 | 0.34 | 0.67 | 115 |
| 8 | 0.392 | 315 | 131 | 0.50 | 0.74 | 169 |
| 9 | 0.408 | 347 | 126 | 0.56 | 0.86 | 189 |
| 10 | 0.376 | 342 | 171 | 0.58 | 0.82 | 196 |
| 11 | 0.128 | 671 | 149 | 1.26 | 0.61 | 426 |
| 12 | 0.097 | 590 | 140 | 0.90 | 0.33 | 304 |
| 13 | 0.944 | 302 | 104 | 0.44 | 1.57 | 149 |
| 14 | 0.679 | 252 | 131 | 0.38 | 0.98 | 128 |
| 15 | 0.323 | 293 | 86 | 0.44 | 0.54 | 149 |
| 16 | 0.381 | 212 | 59 | 0.34 | 0.49 | 115 |
| 17 | 0.659 | 333 | 72 | 0.54 | 1.35 | 182 |
| 18 | 0.829 | 320 | 117 | 0.52 | 1.63 | 176 |
| 19 | 0.649 | 545 | 68 | 0.66 | 1.62 | 223 |
| 20 | 0.526 | 356 | 77 | 0.58 | 1.15 | 196 |
| 21 | 0.305 | 477 | 45 | 0.56 | 0.65 | 189 |
| 22 | 0.344 | 423 | 122 | 0.66 | 0.86 | 223 |
| 23 | 0.301 | 324 | 72 | 0.56 | 0.64 | 189 |
| 24 | 1.011 | 410 | 81 | 0.64 | 2.45 | 216 |
| 25 | 0.708 | 464 | 149 | 0.86 | 2.30 | 291 |
| 26 | 0.295 | 721 | 180 | 0.90 | 1.00 | 304 |
| 27 | 0.304 | 635 | 167 | 0.92 | 1.06 | 311 |
| 28 | 0.380 | 527 | 153 | 0.72 | 1.04 | 243 |
| 29 | 0.327 | 378 | 99 | 0.62 | 0.77 | 209 |
| 30 | <u>0.367</u> | 550 | 158 | 0.60 | <u>0.83</u> | 203 |
| TOTAL | 14.518 | | | | 30.90 | |

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

Wastewater Flows and Radionuclide Concentrations

Facility: Fernald Environmental Management Project

Location: 001 Total Discharge

Month: April 1992

| | Flow (MGD) | Total Alpha (pCi/l)(2) | Total Beta (pCi/l)(2) | Total U (mg/l)(2) | Total U (kgs) | Calculated Total U-238 (pCi/l)(1)(2) |
|------|---------------|------------------------------|-----------------------------|----------------------|------------------|--|
| Avg. | 0.484 | 376 | 114 | 0.56 | 1.03 | 190 |
| Max. | 1.119 | 721 | 180 | 1.26 | 2.45 | 426 |
| Min. | 0.097 | 176 | 45 | 0.34 | 0.33 | 115 |

The average uranium concentration for the previous twelve months was 0.58 mg/l. This is 65.2 percent of the Derived Concentration Guide (DOE Order 5400.5) for ingested water.

- Comments: (1) The activity of this discharge has been and will continue to be reported as Uranium-238 (pCi/l) in accordance with the Ohio EPA format for reporting uranium. Since this does not account for the activity of the other uranium isotopes in the effluent, the total uranium data is also presented. The calculated total U-238 is based on a conversion factor of 337.84 pCi U-238/mg Total U applied to measure value of total uranium.
- (2) Average values presented are flow-weighted.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

Wastewater Flows and Radionuclide Concentrations

Facility: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398705
Cincinnati, Ohio 45239-8705

Location: 11000004002
002 Discharge (Overflow) to Storm Sewer Outfall Ditch
Stormwater Retention Basin Spillway (Effluent to Paddy's Run)

Month: April 1992

There was no discharge to Paddy's Run from the Stormwater Retention Basin.

Based on 1.51 inches of rainfall for the month, the uranium discharge to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 6.80 kgs.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE
AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

PERIOD ENDING APRIL 30, 1992

ENCLOSURE B

FFCA: INITIAL REMEDIAL MEASURES

AND OTHER OPEN ACTIONS

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

INTRODUCTION

Enclosure B describes actions undertaken at the FEMP during the period April 1 through April 30, 1992 that are not covered by the reporting requirements of the Consent Agreement As Amended under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 120 and 106(a).

WORK ASSIGNMENTS AND PROGRESS

Descriptions of ongoing work progress are presented in the following sections of this report. The status of ongoing work in support of the Federal Facility Compliance Agreement (FFCA) is summarized in Table 1 of Enclosure B. Completed work previously reported upon has been eliminated for the sake of brevity. In this portion of the report and in Table 1, descriptions of actions are presented in a format consistent with that of the FFCA.

**COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND
LIABILITY ACT (CERCLA)**

1. Initial Remedial Measures

Section C

K-65 Silo Project - Status information on the K-65 Silo project normally reported in this section is being provided under Operable Unit 4: Silos 1-4.

2. Remedial Investigation/Feasibility Study (RI/FS)

Status information on the Remedial Investigation/Feasibility Study (RI/FS) normally reported in this section is being provided separately in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a).

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

**COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND
LIABILITY ACT (CERCLA)**

3. Reports and Record Keeping

Section B

The RI/FS Monthly Technical Progress Report for March 1992 was transmitted to the U.S. EPA on April 20, 1992 as an integral part of the Consolidated Consent Agreement/Federal Facility Compliance Agreement (CA/FFCA) Monthly Progress Report in accordance with the requirements of Section X of the Consent Agreement As Amended.

CLEAN AIR ACT (CAA)

Section E

The twenty-first Quarterly Particulate Emissions Report for the period October 1, 1991 through December 31, 1991 was submitted to the U.S. EPA on February 20, 1992. This information will now be reported in the Annual NESHAP Compliance Report.

RADIATION DISCHARGE INFORMATION

Section A

The twenty-first Quarterly Liquid Discharge Report for the period October through December 1991 was submitted to the U.S. EPA on February 20, 1992. This information will now be submitted on an annual basis.

REPORTING REQUIREMENTS

Section B

The Federal Facility Compliance Agreement Monthly Progress Report for March 31, 1992, was transmitted to the U.S. EPA on April 20, 1992 as Enclosure B of the Consolidated Consent Agreement/Federal Facility Compliance Agreement (CA/FFCA) Monthly Progress Report.

| <u>ACTION</u> | <u>DESCRIPTION</u> | <u>COMPLETION TIME AFTER FFCA SIGNED</u> | <u>FY1992 STATUS</u> |
|---------------|--|--|--|
| CERCLA | | | |
| 1. | INITIAL REMEDIAL MEASURES | | |
| 1.C | Implement radon control plan approved by the U.S. EPA. | ----- | No longer applicable. Progress on actions to address radon emissions from the K-65 Silos are being reported separately under Section IX-Removal Actions of the Consent Agreement/FFCA Monthly Progress Report. |
| 2. | REMEDIAL INVESTIGATION/FEASIBILITY STUDY | | No action required. |
| 2.A | RI/FS work is to be conducted in accordance with the U.S. EPA guidelines. | N/A | |
| 2.B | --No Action Required-- | ----- | Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a). |
| 2.E | Amend and submit revised RI/FS Work Plan to U.S. EPA if deficiencies are found. | | Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a). |
| 2.F | Implement tasks described in the approved RI/FS Work Plan | | Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA sections 120 and 106(a). |
| 3. | REPORTS AND RECORD KEEPING | | |
| 3.B | Submit monthly RI/FS progress reports. | monthly | The RI/FS Monthly Progress Report for March 1992 was transmitted to the U.S. EPA on April 20, 1992 (DOE-1411-92). |
| CLEAN AIR ACT | | | |
| B.4 | Prepare annual progress report installation and replacement of emission control devices. | yearly | The Fourth Annual Progress Report on the installation and replacement of emission control devices was transmitted to the U.S. EPA on January 28, 1992 (DOE-982-92). |

TABLE 1

**STATUS OF ASSIGNMENTS FOR WORK REQUIRED ON
FEDERAL FACILITY COMPLIANCE AGREEMENT ACTIONS**

MARCH 31, 1992

| | | | |
|-------------|---|---------|--|
| C. | Provide annual reports to the U.S. EPA per 40 CFR 61.94(c). | yearly | The Annual NESHAP Compliance Report for CY1990 was transmitted to the U.S. EPA on June 25, 1991 (DOE-1537-91). |
| D.1 | Provide U.S. EPA with yearly stack-testing schedule. | yearly | The 1989 stack testing schedule was transmitted to the U.S. EPA on June 16, 1989. A letter (DOE-1615-89) was transmitted to the U.S. EPA on September 15, 1989, indicating that, due to the uncertainty concerning resumption of production at the FEMP, the 1989 FFCA Stack Testing Program was being deferred. In August 1991, the DOE confirmed that no further production would take place at the facility, and renamed the facility the FEMP. Some stack operations are expected when waste processing operations are resumed. The U.S. EPA will be provided with notification of future stack testing dates when operating schedules are formulated. |
| D.2 | Provide U.S. EPA with stack-test results for stacks tested that year. | 45 days | Because the FEMP has been out of production since mid-1989, there was no opportunity to perform stack testing. The DOE, in August 1991, confirmed that no future production will take place at the FEMP. Some stack operations are expected when waste processing operations are resumed. Stack test results will be provided following the completion of testing on stacks which are returned to operation. |
| E.1 | Maintain records of monthly particulate matter emissions. | ----- | Ongoing. |
| E.2 | Provide quarterly reports to U.S. EPA on these emissions. | ----- | The twenty-first Quarterly Particulate Emissions Report for the period October 1, 1991 through December 31, 1991 was submitted to the U.S. EPA February 20, 1992 (DOE-941-92). This information will now be reported in the Annual NESHAP Compliance Report. |
| RCRA | | | |
| A.1 | Conduct a hazardous waste determination on all waste streams. | 30 days | Pursuant to the proposed Amended Consent Decree, a RCRA waste evaluation will be conducted on all site materials by 10/92. |

**STATUS OF ASSIGNMENTS FOR WORK REQUIRED ON
FEDERAL FACILITY COMPLIANCE AGREEMENT ACTIONS**

MARCH 31, 1992

| | | | |
|-----|---|---------|--|
| A.2 | Commence a hazardous waste analysis program for materials in the landfill and going to the incinerator. | 30 days | Complete. Operation of these units was discontinued and data on the waste which had gone to them was provided in a 30-day FFCA deliverable on August 17, 1986. However, further review of both the waste streams and the potential of the units to be hazardous waste management units are being evaluated as actions required by the proposed Amended Consent Decree. Final results are due October 30, 1992. |
| A.5 | Update the facility closure plan to reflect the year the facility expects to begin closure. | 30 days | The Facility closure date is dependent upon closure schedules for individual TSD units as presented most recently in Section I of the RCRA Part B Permit Application transmitted to the Ohio EPA and the U.S. EPA on October 30, 1991 (DOE-211-92). Facility closure will be completed on a date the last TSD unit is closed. |

RADIATION DISCHARGE INFORMATION

| | | | |
|-----|--|--------|---|
| A.3 | Report to U.S. EPA, Ohio EPA and Ohio Department of Health the results of the continuous liquid discharge samples. | yearly | The twenty-first Quarterly Discharge Report for the period October through December 1991 was transmitted to the U.S. EPA on February 20, 1992 (DOE-941-92). This information will now be reported on an annual basis. |
|-----|--|--------|---|

REPORTING REQUIREMENTS

| | | | |
|----|---|---------|---|
| B. | Issue monthly progress report of actions taken to ensure compliance with FFCA requirements. | monthly | March's FFCA Monthly Progress Report was transmitted to the U.S. EPA on April 20, 1992 (DOE-1411-92). |
|----|---|---------|---|

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

PERIOD ENDING APRIL 30, 1992

ENCLOSURE C

**FEDERAL FACILITY AGREEMENT:
CONTROL AND ABATEMENT OF RADON-222 EMISSIONS**

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**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

Introduction

The Federal Facility Agreement (FFA) between the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (U.S. EPA), signed November 19, 1991, requires that a monthly report be submitted to the U.S. EPA regarding all steps undertaken in the preceding month to implement Part V of the agreement and that all data generated as a result of those actions be submitted.

Enclosure C fulfills those requirements by describing steps taken at the FEMP during the period April 1 through April 31, 1992, to implement Part V, Radon-222 Control and Abatement Plan, paragraphs 19-33 of the FFA.

After four months of data collection for the applicable parameters, preparation is now underway to evaluate the data for use in the Transport Release Models.

Work Assignments and Progress

In this section of Enclosure C, action descriptions and work progress are presented in a format consistent with that of the FFA. Immediately following this section are the K-65 Silos Report and the Selected Radon Data Report. Reporting this data is also a requirement included in the U.S. EPA approved Silos 1 and 2 Removal Action Work Plan (Removal Action No. 4).

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

| <u>FFA Part, Paragraph(s)</u> | <u>Description of Commitment</u> | <u>FFA Due Date</u> | <u>Status of Commitment</u> |
|-----------------------------------|--|--|---|
| Part V, 19 & 21 | Implement the K-65 Silos 1 and 2 Removal Action in accordance with the approved Silos 1 and 2 Removal Action Work Plan. | 12/1/91 | Completed. Installation of the bentonite completed 11/28/91. |
| Part V, 20 | Reduce radon-222 to a level As-Low-As Reasonably-Achievable (ALARA) with the goal as specified in the Silos 1 and 2 Removal Action Work Plan. | 5/22/92 | Report to be issued for reporting the Benotoniite Effectiveness monitoring results to U.S. EPA. |
| Part V, 22 | Submit proposed methodology for estimating radon-222 concentration reductions resulting from completion of the Silos 1 and 2 Removal Action. | Within 60 days of completing removal action; 1/27/92. | Completed. The Bentonite Effectiveness Environmental Monitoring Plan was resubmitted to the U.S. EPA for comment and approval on 3/13/92. Draft EPA comments received on 3/31/92. |
| Part V, 23 | Evaluate performance of the removal action and determine whether or not additional actions are needed prior to final remediation. | None specified. | Proposed methodology for estimating radon-222 concentration reduction submitted to U.S. EPA per paragraph 20 of Part V. |
| Part V, 24, 25, and 33 | Demonstrate compliance with NESHAP Subpart Q at the completion of final remediation using a methodology approved by the U.S. EPA. Applicable to: Silos 1, 2, and 3; Waste Pits 1, 2, 3, 4, and 5 and the Clearwell; and newly discovered radon-222 emission sources. | None specified. | No information to report for April 1992. |
| Part V, 26 | Directly measure radon-222 flux from Waste Pits 1, 2, 3, 4, and 5 and the Clearwell in the RI/FS under the CERCLA Consent Agreement. | None specified. | No information to report for April 1992. |

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| <u>FFA Part, Paragraph(s)</u> | <u>Description of Commitment</u> | <u>FFA Due Date</u> | <u>Status of Commitment</u> |
|-------------------------------|--|---|--|
| Part V, 26 | Include direct measurement data from Waste Pits 1, 2, 3, 4, and 5 and the Clearwell in the RI/FS under the CERCLA Consent Agreement. | None specified. | No information to report for April 1992. |
| Part V, 27 | Estimate Radon-222 emissions from Silo 3 based upon characterization data; include the estimate radon-222 emission data from Silo 3 in the RI/FS that includes Silo 3 under the CERCLA Consent Agreement. | None specified. | No information to report for April 1992. |
| Part V, 28 | Submit documentation or estimates of current radon-222 emissions from existing but newly discovered sources that contain Radium-226 in sufficient concentrations to emit radon-222 in excess of NESHAP Subpart Q prior to final remediation. | Within 30 days of discovery. | No new sources identified. |
| Part V, 30 | Submit methodology for direct measurement or other appropriate means of characterization of the relevant emissions pursuant to paragraph 29 of the FFA. | Within 45 days of the U.S. EPA response pursuant to paragraph 29. | None required. |
| Part V, 31 | Submit results of measurements pursuant to paragraph 30. | Within 30 days of U.S. EPA approval of characterization method. | None required. |
| Part VI, 31 | Submit monthly report on steps undertaken to implement Part V of the FFA in the preceding month. | 20th day of succeeding month. | The fourth progress report being submitted herewith as an integral part of the CERCLA Consent Agreement Monthly Progress Report. |

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**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending April 30, 1992

Data Reporting Requirements: RA No. 4: Silos 1 and 2

As defined in the Silos 1 and 2 Removal Action Work Plan and the Federal Facility Agreement, data associated with monitoring the effectiveness of the bentonite installation are included in the following tables: the K-65 Silos Report and the Selected Radon Data Report.

The K-65 Silos Report includes or will include data on the following parameters:

- Ambient temperature and pressure near the silos.
- Silos 1 and 2 headspace temperature.
- Silos 1 and 2 differential pressure.
- Silos 1 and 2 radon headspace concentration.
- Silos 1 and 2 headspace humidity

The radon silo headspace data submitted has been collected manually since the completion of the bentonite installation. An automated data logging system is currently being calibrated. After calibration and final system check-out of the data logging system is completed, the data for Silos 1 and 2 and the perimeter pylons will be automatically recorded.

The Selected Radon Data Report includes or will include radon data from the following locations:

- Air monitoring station number 5 (AMS-5)
- Air monitoring station number 6 (AMS-6)
- Pilot Plant

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

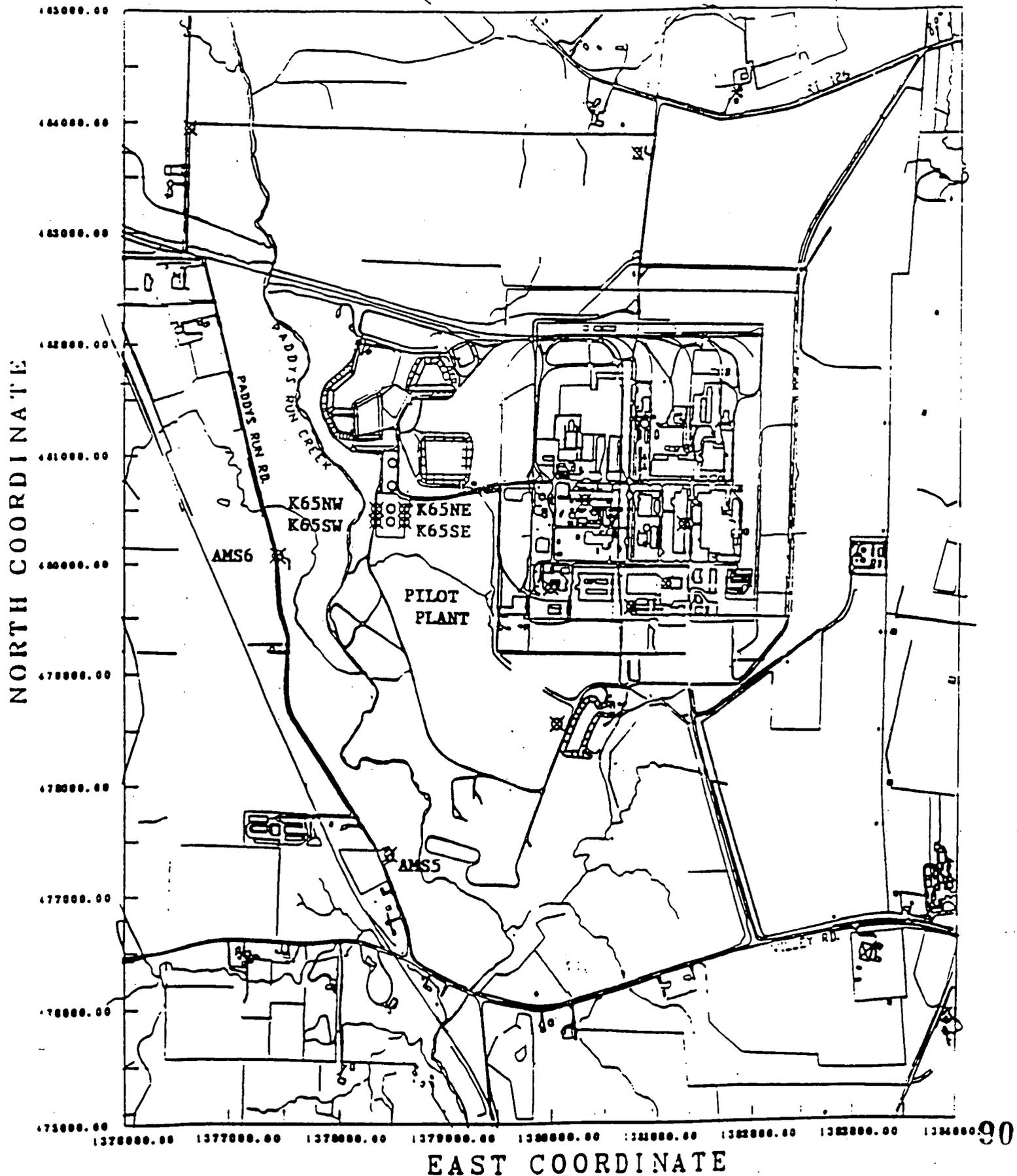
Period Ending April 30, 1992

- Background data
- K-65 Monitoring Data (K-65 NW, K-65 SW, K-65 NE, K-65 SE). Figure C-6, immediately following, identifies the sampling locations.

Minimum and maximum values are based on the lowest and highest hourly values that were recorded and incorporated into the daily averages.

REAL-TIME RADON MONITORING LOCATIONS

Background office - Hamilton



**CONSOLIDATE CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/
FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT**

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton

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K-65 SILO REPORT

LOCATION: Silo # 1

DATE: APRIL 1992

| Day | Ambient Temp Deg. F | Pres In. Hg. | Temperature Head Space Deg. F | Inter. Hum. % | Diff. Pres In. HG | Head Space Radon (pCi/l) |
|-----|---------------------------|-----------------|-------------------------------------|---------------------|-------------------------|--------------------------------|
| 1 | 34.5 | 29.286 | 42.8 | 100 | -0.150 | 271,500 |
| 2 | 30.1 | 29.391 | 42.2 | 89 | -0.160 | 268,900 |
| 3 | 31.8 | 29.256 | 41.8 | 100 | -0.130 | ** |
| 4 | 35.1 | 29.120 | 41.9 | 100 | -0.140 | ** |
| 5 | 38.6 | 29.583 | 41.9 | 100 | -0.100 | 227,600 |
| 6 | 43.2 | 29.583 | 42.2 | 100 | -0.090 | ** |
| 7 | 55.3 | 29.392 | 42.9 | 100 | -0.060 | ** |
| 8 | 55.6 | 29.470 | 44.1 | 100 | -0.050 | 241,000 |
| 9 | 58.6 | 29.406 | 44.9 | 100 | -0.210 | 9,800 |
| 10 | 53.1 | 29.402 | 47.1 | 100 | -0.070 | ** |
| 11 | 53.1 | 29.402 | 47.1 | 100 | -0.070 | ** |
| 12 | 53.1 | 29.402 | 47.1 | 100 | -0.070 | ** |
| 13 | • | • | • | • | • | 160,300 |
| 14 | • | • | * | • | * | ** |
| 15 | * | * | • | * | • | 81,400 |
| 16 | 63.8 | 29.378 | 47.4 | 100 | 0.250 | ** |
| 17 | 61.5 | 29.384 | 48.2 | 100 | 0.200 | ** |
| 18 | 63.1 | 29.347 | 48.6 | 100 | -0.220 | ** |
| 19 | 69.6 | 29.326 | 49.1 | 100 | -0.020 | ** |
| 20 | 65.6 | 29.196 | 49.9 | 99 | -0.020 | 207,000 |
| 21 | 63.1 | 29.122 | 50.3 | 100 | -0.040 | 180,900 |
| 22 | 52.4 | 29.374 | 50.2 | 99 | -0.080 | 56,700 |
| 23 | 61.8 | 29.467 | 49.7 | 98 | -0.040 | 16,640 |
| 24 | 60.2 | 29.316 | 50.4 | 99 | -0.060 | ** |
| 25 | 42.7 | 29.318 | 50.0 | 100 | -0.110 | ** |
| 26 | 41.6 | 29.389 | 48.9 | 100 | -0.110 | ** |
| 27 | 41.6 | 29.475 | 48.5 | 100 | -0.120 | ** |
| 28 | 47.6 | 29.545 | 48.2 | 100 | -0.080 | 43,850 |
| 29 | 57.5 | 29.410 | 48.3 | 98 | -0.060 | 331,680 |
| 30 | 58.2 | 29.335 | 48.8 | 98 | -0.050 | 572,160 |

ARITHMETIC

| | | | | | | |
|---------|------|--------|------|-----|--------|---------|
| MEAN | 50.9 | 29.377 | 46.8 | 99 | -0.071 | 190,674 |
| MAXIMUM | *** | *** | *** | 100 | *** | 572,160 |
| MINIMUM | *** | *** | *** | *** | *** | 9,800 |
| MEDIAN | 53.1 | 29.390 | 48.2 | 100 | -0.075 | 193,950 |

Note: * - data not available due to maintenance Head Space Radon is a grab sample

 ** - data currently only scheduled for periodic collection

 *** - data lost due to power outage at site

Maximum and minimum values are based on hourly readings.

Daily values are an average of twenty-four hourly averages.

**CONSOLIDATE CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/
FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT**

3289

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton

K-65 SILO REPORT

LOCATION: Silo # 2

DATE: APRIL 1992

| Day | Ambient Temp Deg. F | Pres In. Hg. | Temperature Head Space Deg. F | Inter. Hum. % | Diff. Pres In. HG | Head Space Radon (pCi/l) |
|-----|---------------------------|-----------------|-------------------------------------|---------------------|-------------------------|--------------------------------|
| 1 | 34.5 | 29.286 | 42.5 | 100 | -0.390 | 178,900 |
| 2 | 30.1 | 29.391 | 41.9 | 89 | -0.480 | 159,500 |
| 3 | 31.8 | 29.256 | 41.5 | 100 | 0.510 | ** |
| 4 | 35.1 | 29.120 | 41.6 | 100 | -0.200 | ** |
| 5 | 38.6 | 29.583 | 41.6 | 100 | 0.100 | 138,000 |
| 6 | 43.2 | 29.583 | 41.9 | 100 | 0.030 | ** |
| 7 | 55.3 | 29.392 | 42.7 | 100 | 0.680 | ** |
| 8 | 55.6 | 29.470 | 43.8 | 100 | 0.720 | 181,700 |
| 9 | 58.6 | 29.406 | 44.8 | 100 | 0.810 | 243,400 |
| 10 | 53.1 | 29.402 | 46.9 | 100 | 0.350 | ** |
| 11 | 53.1 | 29.402 | 46.9 | 100 | 0.350 | ** |
| 12 | 53.1 | 29.402 | 46.9 | 100 | 0.350 | ** |
| 13 | * | * | * | * | * | 65,400 |
| 14 | * | * | * | * | * | ** |
| 15 | * | * | * | * | * | 13,800 |
| 16 | 63.8 | 29.378 | 47.2 | 100 | 0.890 | ** |
| 17 | 61.5 | 29.384 | 48.1 | 100 | 0.700 | ** |
| 18 | 63.1 | 29.347 | 48.5 | 100 | 0.800 | ** |
| 19 | 69.6 | 29.326 | 49.1 | 100 | 1.000 | ** |
| 20 | 65.6 | 29.196 | 49.9 | 100 | 0.800 | 145,600 |
| 21 | 63.1 | 29.122 | 50.3 | 100 | 0.710 | 7,700 |
| 22 | 52.4 | 29.374 | 50.1 | 100 | 0.260 | 46,900 |
| 23 | 61.8 | 29.467 | 49.6 | 100 | 0.770 | 26,980 |
| 24 | 60.2 | 29.316 | 50.4 | 100 | 0.690 | ** |
| 25 | 42.7 | 29.318 | 49.9 | 100 | 0.010 | ** |
| 26 | 41.6 | 29.389 | 48.9 | 100 | -0.030 | ** |
| 27 | 41.6 | 29.475 | 48.4 | 100 | -0.020 | ** |
| 28 | 47.6 | 29.545 | 48.1 | 100 | 0.370 | 162,340 |
| 29 | 57.5 | 29.410 | 48.2 | 100 | 0.990 | 332,310 |
| 30 | 58.2 | 29.335 | 48.7 | 100 | 1.260 | 112,340 |

ARITHMETIC

| | | | | | | |
|---------|------|--------|------|-----|-------|---------|
| MEAN | 50.9 | 29.377 | 46.7 | 100 | 0.418 | 120,991 |
| MAXIMUM | *** | *** | *** | 100 | *** | 332,310 |
| MINIMUM | *** | *** | *** | *** | *** | 7,700 |
| MEDIAN | 53.1 | 29.390 | 48.1 | 100 | 0.440 | 141,800 |

Note: * - data not available due to maintenance Head Space Radon is a grab sample

** - data currently only scheduled for periodic collection

*** - data lost due to power outage at site

Maximum and minimum values are based on hourly readings.

Daily values are an average of twenty-four hourly averages.

SELECTED RADON DATA REPORT

3289

FACILITY: Fernald Environmental Management Report
 U.S. Department of Energy
 7400 Willey Road, P.O. Box 398704
 Cincinnati, Ohio 45239 Hamilton

LOCATION: Selected Sampling Locations

DATE: April, 1992

| Day | NW (pCi/L) | SW (pCi/L) | NE (pCi/L) | SE (pCi/L) |
|-----|---------------|---------------|---------------|---------------|
| 1 | 0.5 | 0.8 | 2.0 | 0.6 |
| 2 | 0.4 | 0.8 | 2.1 | 0.6 |
| 3 | 0.8 | 1.2 | 2.8 | 1.0 |
| 4 | 1.0 | 0.8 | 1.7 | 0.4 |
| 5 | 1.0 | 1.4 | 2.4 | 0.8 |
| 6 | 1.5 | 1.9 | 2.7 | 1.6 |
| 7 | 1.6 | 2.1 | 3.2 | 1.6 |
| 8 | 0.8 | 1.3 | 1.9 | 0.7 |
| 9 | 0.9 | 1.5 | 2.2 | 0.6 |
| 10 | 0.8 | 1.1 | 1.7 | 0.5 |
| 11 | 0.6 | 0.9 | 1.9 | 0.4 |
| 12 | 0.3 | 0.6 | 1.6 | 0.2 |
| 13 | * | 0.9 | 1.6 | 0.3 |
| 14 | • | 1.1 | 1.7 | 0.3 |
| 15 | 1.9 | 1.1 | 1.8 | 0.4 |
| 16 | 1.1 | 1.3 | 2.2 | 0.8 |
| 17 | 0.7 | 1.0 | 1.8 | 0.6 |
| 18 | 0.8 | 1.0 | 1.7 | 0.5 |
| 19 | 0.8 | 1.0 | 1.9 | 0.5 |
| 20 | 0.5 | 0.7 | 1.6 | 0.3 |
| 21 | 0.5 | 0.6 | 1.6 | 0.2 |
| 22 | 0.5 | 1.0 | 1.7 | 0.3 |
| 23 | 0.9 | 1.3 | 2.2 | 1.0 |
| 24 | 0.5 | 0.8 | 1.8 | 0.5 |
| 25 | 0.4 | 0.8 | 1.8 | 0.5 |
| 26 | 0.4 | 0.8 | 1.9 | 0.4 |
| 27 | 0.4 | 0.7 | 1.9 | 0.4 |
| 28 | 0.8 | 1.3 | 2.3 | 0.9 |
| 29 | 1.0 | 1.4 | 2.8 | 1.7 |
| 30 | 0.7 | 1.0 | 1.8 | 0.5 |

| ARITHMETIC | | | | |
|------------|-----|-----|-----|-----|
| MEAN | 0.7 | 1.1 | 2.0 | 0.6 |
| MAXIMUM | 5.6 | 5.8 | 6.6 | 5.2 |
| MINIMUM | 0.1 | 0.4 | 1.2 | 0.1 |
| MEDIAN | 0.8 | 1.0 | 1.9 | 0.5 |

Note: * – suspect data / data under evaluation
 Maximum and minimum values are based on hourly readings
 Daily values are an average of twenty-four hourly averages.

SELECTED RADON DATA REPORT

FACILITY: Fernald Environmental Management Report
 U.S. Department of Energy
 7400 Willey Road, P.O. Box 398704
 Cincinnati, Ohio 45239 Hamilton

LOCATION: Selected Sampling Locations

DATE: April, 1992

| Day | AMS 5 (pCi/L) | AMS 6 (pCi/L) | PILOT PLANT (pCi/L) | BKGRD (pCi/L) |
|-----|------------------|------------------|---------------------------|------------------|
| 1 | 0.3 | 0.5 | 0.6 | 0.4 |
| 2 | 0.3 | 0.5 | 0.7 | 0.4 |
| 3 | 0.6 | 0.7 | 0.9 | 0.6 |
| 4 | 0.4 | 0.5 | 0.6 | 0.4 |
| 5 | 0.6 | 0.7 | 0.8 | 0.8 |
| 6 | 0.9 | 1.0 | 1.1 | 0.8 |
| 7 | 1.0 | 1.0 | 1.0 | 0.8 |
| 8 | 0.6 | 0.6 | 0.7 | 0.6 |
| 9 | 0.8 | 0.6 | 0.6 | 0.6 |
| 10 | 0.6 | 0.6 | 0.7 | 0.5 |
| 11 | 0.3 | 0.4 | 0.5 | 0.4 |
| 12 | 0.3 | 0.0 | 0.5 | 0.3 |
| 13 | 0.3 | 0.4 | 0.6 | 0.3 |
| 14 | 0.3 | 0.5 | 0.6 | 0.4 |
| 15 | 0.4 | 0.5 | 0.6 | 0.5 |
| 16 | 0.8 | 0.7 | 0.8 | 0.8 |
| 17 | 0.4 | 0.5 | 0.6 | 0.5 |
| 18 | 0.4 | 0.6 | 0.6 | 0.5 |
| 19 | 0.4 | 0.5 | 0.6 | 0.5 |
| 20 | 0.3 | 0.4 | 0.6 | 0.4 |
| 21 | 0.3 | 0.4 | 0.6 | 0.4 |
| 22 | 0.3 | 0.4 | 0.6 | 0.4 |
| 23 | 0.6 | 0.7 | 0.8 | 0.6 |
| 24 | 0.3 | 0.4 | 0.6 | 0.4 |
| 25 | 0.3 | 0.4 | 0.6 | 0.3 |
| 26 | 0.3 | 0.5 | 0.7 | 0.4 |
| 27 | 0.3 | 0.5 | 0.6 | 0.4 |
| 28 | 0.5 | 0.6 | 0.8 | 0.4 |
| 29 | 0.8 | 0.9 | 1.0 | 0.7 |
| 30 | 0.5 | 0.5 | 0.6 | 0.4 |

| | | | | |
|--------------------|-----|-----|-----|-----|
| ARITHMETIC MEAN | 0.5 | 0.6 | 0.7 | 0.5 |
| MAXIMUM | 2.4 | 2.1 | 2.1 | 2.1 |
| MINIMUM | 0.1 | 0.2 | 0.3 | 0.1 |
| MEDIAN | 0.4 | 0.5 | 0.6 | 0.4 |

Maximum and minimum values are based on hourly readings.
 Daily values are an average of twenty-four hourly averages.

VISUAL CLASSIFICATION OF SOILS

3289

| | | | |
|--------------------------------------|---|---|--|
| PROJECT NUMBER: <u>602.03.01.04</u> | | PROJECT NAME: <u>Farnold RIFES ELMF</u> | |
| BORING NUMBER: <u>2754</u> | COORDINATES: | DATE: <u>3/26/92</u> | |
| ELEVATION: | GWL: Depth <u>NA</u> Date/Time <u>4-22-92</u> | DATE STARTED: <u>3/26/92</u> | |
| ENGINEER/GEOLOGIST: <u>D.O'Brien</u> | Depth Date/Time | DATE COMPLETED: <u>4/22/92</u> | |
| DRILLING METHODS: <u>Cable Tool</u> | | PAGE: <u>1</u> | |

| DEPTH (ft) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 15 IN | RECOVERY (in) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|------------|--------------------------|----------------------------|---------------|---|-------------|----------------------------|----------------------------|
| | 1610 101632 | 2 | 4 | Loose 10YR (4/6) Brownish yellow sand poorly graded w/ some silt & organics. dry | SP | NA | HNO = 0 ppm RX = 60 cpm |
| | | 3 | 0 | No Recovery | NA | NA | |
| 1 | | 3 | 0 | SAA | NA | NA | |
| | | 2 | 0 | SAA | NA | NA | |
| 2 | 1615 101633 101634 | 2 | 6 | Soft 10YR (4/3) brown silty clay w/ sand. No plasticity, dry. | CI | .5 | HNO = 0 ppm RX = 40 cpm |
| | 1615 101635 101636 | 5 | 6 | U. Stiff. 10YR (3/4) yellowish brown silty clay, little sand, low plasticity, slight moist. | CI | 2.5 | |

NOTES:
 Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 43 Cyclone
 Driller: Joe Barile
Craig Coulter

SAA - same as above
 NA - not applicable
 Bkgd: HNO = 0 ppm
 RX = 40-60 cpm

SAMPLES collected per ASTM Standard Proctoration Test
 Colors identified by using Munsell Color Chart

VISUAL CLASSIFICATION OF SOILS

| | | |
|-------------------------------|----------------------------------|-------------------------|
| PROJECT NUMBER: 602.03.01.04 | PROJECT NAME: Farnold RIFES EWMF | |
| BORING NUMBER: 2754 | COORDINATES: | DATE: 3/24/92 |
| ELEVATION: | GWL: Depth Date/Time | DATE STARTED: 3/24/92 |
| ENGINEER/GEOLOGIST: D.O'Brien | Depth Date/Time | DATE COMPLETED: 3/22/92 |
| DRILLING METHODS: Cable Tool | PAGE 2 OF 22 | |

| DEPTH (ft) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER (6 IN) | RECOVERY (IN) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (%SF) | REMARKS |
|------------|--------------------------|-----------------------------|---------------|--|-------------|----------------------------|--------------------------------------|
| 14 | 1015 101637 101638 | 6 | 6 | V. STIFF. 10YR (3/4) yellowish brown silty clay, low plasticity slightly moist | CI | 2.5 | |
| | | 9 | 0 | No Recovery | NA | NA | |
| 4 | 1020 101639 | 11 | 6 | V. STIFF. 2.5Y (6/6) olive yellow clay w/ gravel no plasticity, slightly moist | CI | 3.5 | HNo = 0ppm R _x = 40cpm |
| | | 14 | 6 | SAA | CI | 4.0 | |
| 5 | | 21 | 6 | SAA | CI | 3.25 | |
| | | 29 | 0 | No Recovery. | NA | NA | |

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: 43 Cyclone

Driller: Joe Bacile
Craig Carter

SAA - same as above
NA - not applicable

See p. 1

VISUAL CLASSIFICATION OF SOILS

3289

| | | | |
|-------------------------------|--------------|-----------------------------------|-------------------------|
| PROJECT NUMBER: 602.03.01.04 | | PROJECT NAME: Farnold RILES ECOMF | |
| BORING NUMBER: 2754 | COORDINATES: | | DATE: 3/26/92 |
| ELEVATION: | GWL: Depth | Date/Time | DATE STARTED: 3/26/92 |
| ENGINEER/GEOLOGIST: D.O'Brien | Depth | Date/Time | DATE COMPLETED: 3/22/92 |
| DRILLING METHODS: Cable Tool | | | PAGE 8 |

| DEPTH (ft) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 1.5 (in) | RECOVERY (in) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (%) | REMARKS |
|------------|-----------------------------|-------------------------------|---------------|---|-------------|--------------------------|--|
| 6 | 101630 101640 3/26/92 | 2 | 6 | Soft. 2.54 (6%) Olive yellow silty clay w/ gravel, low plasticity, slightly moist | CI | .5 | HNO = 0 ppm AS = 600 ppm |
| | | 5 | 6 | SAA, mod. stiff | CI | 1.5 | |
| 7 | | 5 | 4 | SAA, stiff | CI | 1.5 | |
| | | 13 | 0 | No Recovery | NA | NA | |
| 8 | 0830 101641 3/27/92 | | 17 | v. stiff. 2.54 (6%) Olive yellow clay w/ gravel, low plasticity, slightly moist | CI | 2.5 | HNO = 0 ppm AS = 200 ppm Archived Shelby |

NOTES:
 Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 43 Cyclone
 Driller: Joe Barile
Craig Carter

SAA - same as above
 NA - not applicable

See p. 1

VISUAL CLASSIFICATION OF SOILS

3289

| | | | |
|-------------------------------|--------------|----------------------------------|-------------------------|
| PROJECT NUMBER: 602.03.01.04 | | PROJECT NAME: Farnold RIFES ELMF | |
| BORING NUMBER: 2754 | COORDINATES: | | DATE: 3/27/92 |
| ELEVATION: | GWL: Depth | Date/Time | DATE STARTED: 3/24/92 |
| ENGINEER/GEOLOGIST: D.O'Brien | Depth | Date/Time | DATE COMPLETED: 3/27/92 |
| DRILLING METHODS: Cable Tool | | | PAGE 4 OF 52 |

| DEPTH (ft) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 10.1m | RECOVERY (m) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (%SF) | REMARKS |
|------------|------------------|----------------------------|--------------|--|-------------|----------------------------|----------------------------|
| 10 | | 5 | | | | | |
| | | 8 | 6 | 050 (BL/92) (6/6) Olive yellow V. STIFF. 2.5Y (10/3) clay w/ gravel, low plasticity slightly moist | cl | 2.5 | |
| 11 | 0855 101442 | 8 | 6 | V. STIFF. 10YR (6/3) Pale brown, silty clay low plasticity, slightly moist | cl | 2.0 | HNU = 0 ppm BX = 40 cpm |
| | 3/27/92 | 9 | 6 | SAA | cl | 2.0 | |

NOTES:
 Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 43 Cyclone
 Driller: Joe Basile
Craig Coulter

SAA - same as above
 NA - not applicable

See p. 1

VISUAL CLASSIFICATION OF SOILS

3289

| | | |
|-------------------------------|----------------------------------|-------------------------|
| PROJECT NUMBER: 602.03.01.04 | PROJECT NAME: Farnold RILES ELMF | |
| BORING NUMBER: 2754 | COORDINATES: | DATE 3/27/92 |
| ELEVATION: | GWL: Depth Date/Time | DATE STARTED: 3/26/92 |
| ENGINEER/GEOLOGIST: D.O'Brien | Depth Date/Time | DATE COMPLETED: 3/22/92 |
| DRILLING METHODS: Cable Tool | PAGE 5 | |

| DEPTH (ft) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 100mm | RECOVERY (in) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (%SF) | REMARKS |
|------------|--------------------------|----------------------------|---------------|--|-------------|----------------------------|--|
| | | 5 | 6 | V. stiff 104R (4/3) Pale brown silty clay low plasticity, slightly moist | CI | 2.0 | |
| | | 29 | 6 | SAA | CI | 2.5 | |
| 13 | 0905 101642 101643 | 6 | 6 | SAA | CI | 3.25 | H _{Nu} = 0 ppm B ₈ = 60 cpm |
| | | 12 | 6 | SAA, hard | CI | 4.0 | |
| 4 | 0905 101643 | 10 | 6 | stiff, 104R (5/1) Gray silty clay, low plasticity slightly moist | CI | 1.5 | |
| | | 13 | 6 | SAA | CI | 1.5 | |

NOTES:

Drilling Contractor Annsylvania Drilling
 Drilling Equipment 43 Cyclone
 Driller: Joe Baille
Craig Carter

SAA - same as above
 NA - not applicable

See p. 1

VISUAL CLASSIFICATION OF SOILS

3289

| | | | |
|--------------------------------------|------------|--|--------------------------------|
| PROJECT NUMBER: <u>602.03.01.04</u> | | PROJECT NAME: <u>Farnold Rifles EWMP</u> | |
| BORING NUMBER: <u>2754</u> | | COORDINATES: | DATE: <u>3/27/92</u> |
| ELEVATION: | GWL: Depth | Date/Time | DATE STARTED: <u>3/26/92</u> |
| ENGINEER/GEOLOGIST: <u>D.O'Brien</u> | Depth | Date/Time | DATE COMPLETED: <u>3/22/92</u> |
| DRILLING METHODS: <u>Cable Tool</u> | | | PAGE: <u>1</u> |

| DEPTH (ft) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 10 (in) | RECOVERY (in) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (%TSF) | REMARKS |
|------------|--|------------------------------|---------------|---|-------------|-----------------------------|--|
| 15 | 0940 D14K 101646 3/27/92 | 3 | 6 | Stiff, 10YR (5/1) Gray clay, mod. plasticity slightly moist. | CI | 1.75 | H _{Nu} = 0 ppm BS = 40 cpm |
| | 0940 101647 101648 3/27/92 | 4 | 6 | SAA, v. stiff | CI | 2.0 | |
| 16 | | 6 | 0 | No Recovery | NA | NA | |
| | | 8 | 0 | No Recovery | NA | NA | |
| 17 | 0955 101649 3/27/92 | 4 | 6 | v. Stiff, 10YR (5/1) Gray clay, low plasticity slightly moist | CI | 2.5 | H _{Nu} = 0 ppm BS = 60 cpm |
| | | 7 | 6 | SAA, stiff | CI | 1.0 | |

NOTES:

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 43 Cyclone
 Driller: Joe Basile
Craig Coulter

SAA - same as above
 NA - not applicable

See p. 1

VISUAL CLASSIFICATION OF SOILS

3289

| | | |
|-------------------------------|----------------------------------|-------------------------|
| PROJECT NUMBER: 602.03.01.04 | PROJECT NAME: Farnold RIFES EWMP | |
| BORING NUMBER: 2754 | COORDINATES: | DATE 3/27/92 |
| ELEVATION: | GWL: Depth Date/Time | DATE STARTED: 3/26/92 |
| ENGINEER/GEOLOGIST: D.O'Brian | Depth Date/Time | DATE COMPLETED: 3/22/92 |
| DRILLING METHODS: Cable Tool | PAGE 7 | |

| DEPTH (ft) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 10 IN | RECOVERY (in) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (%SF) | REMARKS | |
|------------|--------------------------|----------------------------|---------------|---|-------------|----------------------------|---|--|
| 14 | 0955 101050 | 8 | 6 | Stiff, 10YR(5/3) brown silty clay, low plasticity slightly moist | CI | 1.5 | | |
| 17 | 3/27/92 | 11 | 6 | SAA | CI | 1.25 | | |
| 19 | 1020 101051 101052 | 25 | | 1.5 stiff, 10YR(5/1) Gray granular clay, no plasticity slightly moist | CI | 3.75 7.75 | HNU = 0 ppm ASO RX = 40 cpm 3/27/92 | |
| 20 | 3/27/92 | Shallow Tube | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTES:
 Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 43 Cyclone
 Driller: Joe Beale
Craig Carter

SAA - same as above
 NA - not applicable

See p. 1

VISUAL CLASSIFICATION OF SOILS

| | | | |
|-------------------------------|----------------------------------|--------------|-------------------------|
| PROJECT NUMBER: 602.03.01.04 | PROJECT NAME: Farnold RILEY ELMK | | |
| BORING NUMBER: 2754 | COORDINATES: | DATE 3/27/92 | |
| ELEVATION: | GWL: Depth | Date/Time | DATE STARTED: 3/21/92 |
| ENGINEER/GEOLOGIST: D.O'Brien | Depth | Date/Time | DATE COMPLETED: 3/22/92 |
| DRILLING METHODS: Cable Tool | PAGE 8 | | 22 |

| DEPTH (ft) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 10 IN | RECOVERY (in) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (%SF) | REMARKS |
|------------|------------------|----------------------------|---------------|--|-------------|----------------------------|--------------------------------------|
| 22 | 10163 10163 | 1 | | V. STAY. 13YR (B11) Gray granully clay, no plasticity slightly moist. | CI | 3.75 | |
| 22 | 10164 10164 | 4 | 6 | V. STAY 2.5y (NH1) Dark gray granully silty clay no plasticity, slightly moist | CI | 2.0 | HNU = 0ppm R _x = 60cpm |
| 23 | | 8 | 6 | SAA | CI | 2.0 | |
| 23 | | 11 | 6 | SAA | CI | 2.75 | |
| | | 15 | 5 | SAA | CI | 2.5 | |

NOTES: Annsylvania Drilling SAA - same as above
 Drilling Contractor 43 Cyclone NA - not applicable
 Drilling Equipment Joe Bacile
 Driller: Craig Carter See p. 1

VISUAL CLASSIFICATION OF SOILS

3289

| | | | |
|--------------------------------------|--|---|--------------------------------|
| PROJECT NUMBER: <u>602.03.01.04</u> | | PROJECT NAME: <u>Farnold RILES ELMF</u> | |
| BORING NUMBER: <u>2754</u> | | COORDINATES: | DATE: <u>3/27/92</u> |
| ELEVATION: | | GWL: Depth Date/Time | DATE STARTED: <u>3/24/92</u> |
| ENGINEER/GEOLOGIST: <u>D.O'Brian</u> | | Depth Date/Time | DATE COMPLETED: <u>3/22/92</u> |
| DRILLING METHODS: <u>Cable Tool</u> | | PAGE: <u>9</u> OF <u>22</u> | |

| DEPTH (ft) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 10 IN | RECOVERY (in) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (%SF) | REMARKS |
|------------|------------------|----------------------------|---------------|---|-------------|----------------------------|---|
| 14.1 | 1120 101654 | 12 | 4 | Stiff, 2.5y (N41) Dark gray gravelly silty clay, no plasticity slightly moist | CI | 1.25 | H ₂ O = 0 ppm R ₂ = 40 cpm |
| | | 10 | 0 | No Recovery | NA | NA | |
| 25 | | 13 | 0 | No Recovery | NA | NA | |
| | | 12 | 0 | No Recovery | NA | NA | |
| 26 | 101654 101654 | 8 | 6 | Stiff, 2.5y (N41) Dark gray gravelly silty clay no plasticity, slightly moist | CI | 1.15 | H ₂ O = 0 ppm R ₂ = 50 cpm |
| | | 4 | 0 | No Recovery | NA | NA | |

NOTES:

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 43 Cyclone
 Driller: Joe Basile
Craig Carter

SAA - same as above
 NA - not applicable

See p. 1

VISUAL CLASSIFICATION OF SOILS

| | | | |
|-------------------------------|------------|----------------------------------|-------------------------|
| PROJECT NUMBER: 602.03.01.04 | | PROJECT NAME: Farnold RIFES EUMF | |
| BORING NUMBER: 2734 | | COORDINATES: | DATE: 3/30/92 |
| ELEVATION: | GWL: Depth | Date/Time | DATE STARTED: 3/26/92 |
| ENGINEER/GEOLOGIST: D.O'Brian | Depth | Date/Time | DATE COMPLETED: 3/22/92 |
| DRILLING METHODS: Cable Tool | | | PAGE 10 OF 22 |

| DEPTH (ft) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 10 IN | RECOVERY (in) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (%SF) | REMARKS |
|------------|--------------------------|----------------------------|---------------|--|-------------|----------------------------|--|
| | | 4 | 0 | No Recovery | NA | NA | |
| | | 9 | 0 | No Recovery | NA | NA | |
| 28 | 0935 101656 101657 | 7 | 6 | Very dense, 5y (5/1) Gray sand well graded slightly moist. | SW | NA | HM ₆₀ = 0 ppm B ₆₀ = 40 cph |
| | 0935 101658 101659 | 11 | 6 | SAA | SW | NA | |
| 29 | | 50 | 0 | No Recovery | NA | NA | |
| | | 50/3 | 0 | No Recovery | NA | NA | |

NOTES:
 Drilling Contractor Annsylvania Drilling
 Drilling Equipment 43 Cyclone
 Driller: Joe Basile
Craig Cantor

SAA - same as above
 NA - not applicable

See p. 1

VISUAL CLASSIFICATION OF SOILS

3289

| | | | |
|-------------------------------|--|----------------------------------|-------------------------|
| PROJECT NUMBER: 602.03.01.04 | | PROJECT NAME: Farnold RIFES EWMF | |
| BORING NUMBER: 2754 | | COORDINATES: | DATE: 3/30/92 |
| ELEVATION: | | GWL: Depth Date/Time | DATE STARTED: 3/26/92 |
| ENGINEER/GEOLOGIST: D.O'Brian | | Depth Date/Time | DATE COMPLETED: 3/22/92 |
| DRILLING METHODS: Cable Tool | | PAGE 11 | |

| DEPTH | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 10 IN | RECOVERY (IN) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (%SF) | REMARKS |
|-------|------------------|----------------------------|---------------|---|--------------------------|----------------------------|----------------------------|
| 14 | 09150 10160 | 18 | 6 | Medium Dense 5y (5/1) Gray well graded sand, slightly moist | SW | NA | HNU = 0 ppm RX = 50 cpm |
| | 10160 | | | | | | |
| | | 17 | 6 | SAA | SW | NA | |
| 31 | | 13 | 6 | Stiff 5y (5/1) Gray clayey silt, high plasticity slightly moist | ML et cy 5/4/92 | 1.0 | |
| | | 15 | 6 | SAA | ML et cy 5/4/92 | 1.25 | |
| 32 | 1000 10161 | 7 | 6 | Stiff 5y (5/1) Gray silty clay, med plasticity some gravel, med. plasticity moist | CI | 1.0 | HNU = 0 ppm RX = 50 cpm |
| | 10161 | | | | | | |
| | | 7 | 6 | SAA | CI | 1.0 | |

NOTES:
 Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 43 Cyclone
 Driller: Joe Basile
Craig Coulter
 SAA - same as above
 NA - not applicable
 See p. 1

VISUAL CLASSIFICATION OF SOILS

3289

| | | |
|---------------------------------------|--|--------------------------------|
| PROJECT NUMBER: <u>102.03.01.04</u> | PROJECT NAME: <u>Finnold RIFFS ELUMF</u> | |
| BORING NUMBER: <u>2754</u> | COORDINATES: | DATE: <u>3/31/92</u> |
| ELEVATION: | GWL: Depth Date/Time | DATE STARTED: <u>3/24/92</u> |
| ENGINEER/GEOLOGIST: <u>D. O'Brian</u> | Depth Date/Time | DATE COMPLETED: <u>4/22/92</u> |
| DRILLING METHODS: <u>Cable Tool</u> | PAGE <u>12</u> OF <u>22</u> | |

| DEPTH (ft) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 16 in | RECOVERY (%) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|------------|------------------|----------------------------|--------------|--|-----------------|----------------------------|---|
| | | 10 | 6 | Stiff. 54 (SI) Gray silty clay with gravel, mod. plasticity, moist | cl | 1.25 | |
| | | 16 | 6 | SAA | cl | 1.0 | |
| 34 | 07850 101662 | 3 | 6 | DO 3/31/92 SA Mod. Stiff. 54 (SI) Gray clayey silt with gravel mod. plasticity, moist | ML et 5/4/92 | .75 | H ₂ O = 6ppm R ₂ = 40cpm |
| | | 8 | 2 | SAA | ML et 5/4/92 | .5 | |
| 35 | | 7 | 0 | No Recovery | NA | NA | |
| | | 15 | 0 | No Recovery | NA | NA | |

NOTES
 Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 43 Cyclone
 Driller: Joe Barile
Craig Coulter

See p. 1

VISUAL CLASSIFICATION OF SOILS

3289

| | | | |
|--------------------------------|--|----------------------------------|--|
| PROJECT NUMBER: 602.03.01.04 | | PROJECT NAME: Fernald RILEY ELMF | |
| BORING NUMBER: 2754 | | COORDINATES: | |
| ELEVATION: | | DATE: 2/31/92 | |
| ENGINEER/GEOLOGIST: D. O'Brien | | DATE STARTED: 3/24/92 | |
| DRILLING METHODS: | | DATE COMPLETED: 4/22/92 | |
| | | PAGE 13 OF 22 | |

| DEPTH (FEET) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 16 IN | RECOVERY (IN) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|--------------|------------------|----------------------------|---------------|---|------------------------|----------------------------|---|
| 31-32 | 0930 101663 | 13 | 6 | Dense. 54 (Bl) Gray clayey sand, poorly graded, moist | SC SP (B) 5/4/92 | NA | H ₂ O = 0 ppm R ₂ = 60 CPM |
| 37 | | 21 | 0 | No Recovery | NA | NA | |
| | | 15 | 0 | No Recovery | NA | NA | |
| | | 28 | 0 | No Recovery | NA | NA | |
| 38 | 1000 101664 | 8 | 4 | V. St. FF. 54 (Bl) Gray granular clayey sand moist | SC SP (B) 5/4/92 | NA | H ₂ O = 0 ppm R ₂ = 10 CPM |
| | | 19 | 0 | No Recovery | NA | NA | |

NOTES:
 Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 43 Cyclone
 Driller: Joe Barile
Craig Coulter

See p. 1

VISUAL CLASSIFICATION OF SOILS

| | | | |
|---------------------------------------|--|-----------------------------|-----------|
| PROJECT NUMBER: <u>100.03.01.04</u> | | PROJECT NAME: <u>ELWMA</u> | |
| BORING NUMBER: <u>2754</u> | | COORDINATES: | |
| ELEVATION: | | GWL: Depth | Date/Time |
| ENGINEER/GEOLOGIST: <u>D. O'Brien</u> | | Depth | Date/Time |
| DRILLING METHODS: <u>Cable Tool</u> | | PAGE <u>14</u> OF <u>22</u> | |

| DEPTH (Feet) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 16 in | RECOVERY (%) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|--------------|-------------------------|----------------------------|--------------|--|-------------|----------------------------|----------------------------|
| | | 35 | 0 | No Recovery | NA | NA | |
| | | 36 | 0 | No Recovery | NA | NA | |
| 40 | 101B 101B65 21519 | 4 | 6 | stiff. 54 (Bl) Gray, gran- ulely clay, no plasticity moist | CI | 1.5 | HNU = 0 ppm BS = 50 cpm |
| | | 7 | 6 | SAA | CI | 2.0 | |
| 41 | | 17 | 0 | No Recovery | NA | NA | |
| | | 27 | 0 | No Recovery | NA | NA | |

NOTES:
 Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: H3 Cyclone
 Driller: Joe Bault
Craig Cantor
 See p. 1

VISUAL CLASSIFICATION OF SOILS

3289

| | | |
|---------------------------------------|---|--------------------------------|
| PROJECT NUMBER: <u>102.09.01.04</u> | PROJECT NAME: <u>Fernald Rites EUMF</u> | |
| BORING NUMBER: <u>2754</u> | COORDINATES: | DATE: <u>3/31/92</u> |
| ELEVATION: | GWL: Depth Date/Time | DATE STARTED: <u>3/26/92</u> |
| ENGINEER/GEOLOGIST: <u>D. O'Brien</u> | Depth Date/Time | DATE COMPLETED: <u>4/22/92</u> |
| DRILLING METHODS: <u>Cable Tool</u> | PAGE: <u>15</u> | OF: <u>22</u> |

| DEPTH (ft) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 14 IN | RECOVERY (%) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (%SF) | REMARKS |
|------------|---------------------------|----------------------------|--------------|---|-------------|----------------------------|--------------------------|
| 43 | 1030 101606 3/31/92 | 8 | 6 | V. stiff. 10YR(3B) Dark brown clayey silt with gravel & organics. No plasticity, slightly moist | ML | 2.25 | HMU = 0ppm PS = 60cpm |
| | | 10 | 6 | SAA | ML | 20 | |
| 43 | | 23 | 6 | SAA | ML | 2.25 | |
| | | | | * Bottom of till at 43.5 Ft | | | |
| | | 23 | 6 | Dense. 5Y(5/1) Gray poorly graded sand, dry | SP | NA | |
| 44 | 1043 101607 3/31/92 | 5 | 6 | Dense. 5Y(5/1) Gray poorly graded sand, dry | SP | NA | HMU = 0ppm PS = 60cpm |
| | | 17 | 4 | SAA | SP | NA | |

NOTES:
 Drilling Contractor: Penn Drill
 Drilling Equipment: 43 Cyclone
 Driller: Tom Rault
Craig Carter

SAA - same as above
 NA - not applicable
 See p. 1

VISUAL CLASSIFICATION OF SOILS

3289

| | | | |
|--------------------------------------|--|--|--------------|
| PROJECT NUMBER: <u>W02-08-01-04</u> | | PROJECT NAME: <u>Fernand Rills E/WDF</u> | |
| BORING NUMBER: <u>2754</u> | | COORDINATES: | |
| ELEVATION: | | GWL: Depth | Date/Time |
| ENGINEER/GEOLOGIST: <u>D. O'BRUN</u> | | Depth | Date/Time |
| DRILLING METHODS: <u>Cable Tool</u> | | PAGE <u>16</u> | OF <u>22</u> |

| DEPTH (FE) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 16 IN | RECOVERY (IN) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|---------------|---------------------|----------------------------------|------------------|------------------------------|-------------|----------------------------------|---------|
| | | 21 | ○ | No Recovery | NA | NA | |
| | | 25 | ○ | No Recovery | NA | NA | |
| 46 | | | | Begin sampling every 5ft. | | | |
| 47 | | | | | | | |

NOTES:
 Drilling Contractor: Ann Drill
 Drilling Equipment: 43 Cyclone
 Driller: Joe Rourke
Greg Coulter

NA - same as above
 NA - not applicable

see p. 1

VISUAL CLASSIFICATION OF SOILS

| | | |
|---------------------------------------|--|--------------------------------|
| PROJECT NUMBER: <u>602.03.01.04</u> | PROJECT NAME: <u>Finnald RIFs EWMF</u> | |
| BORING NUMBER: <u>2754</u> | COORDINATES: | DATE: <u>3/31/92</u> |
| ELEVATION: | GWL: Depth Date/Time | DATE STARTED: <u>3/24/92</u> |
| ENGINEER/GEOLOGIST: <u>D.O. Brown</u> | Depth Date/Time | DATE COMPLETED: <u>4/22/92</u> |
| DRILLING METHODS: <u>Cable Tool</u> | PAGE: <u>17</u> | OF: <u>22</u> |

| DEPTH (FC) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 16 IN | RECOVERY (IN) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|------------|-------------------|----------------------------|---------------|---|-------------|----------------------------|---|
| 40 | 101668 3/21/92 | 22 51-52 | 6 | V. Dense, 54 (51) Gray. Silty clayey sand, dry | SC | NA | H _N = 0 ppm R _S = 60 cpm |
| 55 | 101669 3/21/92 | 22 51-52 | 10 | V. Dense 54 (51) Gray Silty sand poorly graded, dry | SP | NA | H _N = 0 ppm R _S = 60 cpm |
| 60 | 101670 3/21/92 | 15-16 | 10 | Med. Dense. 10YR (4/6) Dark yellowish brown, sand, fine poorly graded, dry | SP | NA | H _N = 0 ppm R _S = 60 cpm |
| 65 | 101671 3/21/92 | 17 50/6 | 5 | V. Dense, SAA | SP | NA | H _N = 0 ppm R _S = 40 cpm |
| 70 | 101672 4/1/92 | 49 50/3 | 12 | V. Dense. 10YR (4/6) Dark yellowish brown, coarse sand poorly graded slightly moist | SP | NA | H _N = 0 ppm R _S = 50 cpm |
| 75 | 101673 4/1/92 | 19 50/5 | 8 | V. Dense. 10YR (4/6) Dark yellowish brown, coarse sand w/ gravel poorly graded slightly moist | SP | NA | H _N = 0 ppm R _S = 40 cpm |

NOTES:
 Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: H3 Ciplone
 Driller: The Road
Craig Carter

SAA - same as above
 NA - not applicable

See p. 1

VISUAL CLASSIFICATION OF SOILS

| | | |
|---------------------------------------|---|--------------------------------|
| PROJECT NUMBER: <u>602.03.01.04</u> | PROJECT NAME: <u>Fernald Riles EWMA</u> | |
| BORING NUMBER: <u>2754</u> | COORDINATES: | DATE: <u>4/1/92</u> |
| ELEVATION: | GWL: Depth Date/Time | DATE STARTED: <u>3/21/92</u> |
| ENGINEER/GEOLOGIST: <u>D. O. Brun</u> | Depth Date/Time | DATE COMPLETED: <u>4/22/92</u> |
| DRILLING METHODS: <u>Cable Tool</u> | PAGE: <u>18</u> | OF: <u>22</u> |

| DEPTH | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 14 IN | RECOVERY IN | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (%SF) | REMARKS |
|-------|------------------|----------------------------|-------------|---|-------------|----------------------------|----------------------------|
| 80 | 10114 4/1/92 | 17 50/3 | 7 | V. Dark 10YR (4/6) brown color, poorly graded, slightly moist | SP | NA | HMU = 0 ppm BS = 40 cpm |
| 85 | 10165 4/1/92 | 50/5 | 3 | SAA Bottom 1" 5y(5/1) gray clayey sand slightly moist | SP | NA | HMU = 0 ppm BS = 60 cpm |
| 90 | 10176 4/1/92 | 50/5 | 8 | Hard 5y(4/3) olive silty, gravelly clay, no plasticity, slightly moist | CI | 24.5 | HMU = 0 ppm BS = 40 cpm |
| 95 | 10177 4/1/92 | 30 50/5 | 4 | SAA | CI | 24.5 | HMU = 0 ppm BS = 60 cpm |
| 100 | 10178 4/2/92 | 37 50/2 | 12 | SAA, medium wt gray | CI | 24.5 | HMU = 0 ppm BS = 60 cpm |
| 105 | 10179 4/2/92 | 50/5 | 3 | SAA V. STIFF 5y(4/3) olive silty clay w/ gravel, no plasticity, slightly moist | CI | 2.25 | HMU = 0 ppm BS = 60 cpm |

NOTES:
 Drilling Contractor: Ann Drill
 Drilling Equipment: H3 Cyclone
 Driller: Joe Pank
Craig Curtis

SAA - some as above
 NA - not applicable
 See p. 1

VISUAL CLASSIFICATION OF SOILS

| | | | | | |
|--|--|---------------------------|--|-----------------------------------|--|
| PROJECT NUMBER: <u>W02.03.01.04</u> | | PROJECT NAME: <u>EWMP</u> | | DATE: <u>4/2/92</u> <u>4/2/92</u> | |
| BORING NUMBER: <u>274</u> | | COORDINATES: | | DATE STARTED: <u>3/21/92</u> | |
| ELEVATION: | | GWL: Depth Date/Time | | DATE COMPLETED: <u>4/2/92</u> | |
| ENGINEER/GEOLOGIST: <u>D. J. Quinn</u> | | Depth Date/Time | | PAGE <u>19</u> OF <u>22</u> | |
| DRILLING METHODS: <u>Cable Tool</u> | | | | | |

| DEPTH | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 100mm | RECOVERY | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|-------|---------------------------|----------------------------|----------|---|-------------|----------------------------|---------------------------|
| 117 | 10418 10419 4/2/92 | 15 15 | 2 | 1/2 ft. 5Y(4.3) Olive mottled w/ gray granular clay low plasticity slightly moist | cl | 1.0 | HNu = 0ppm RS = 400ppm |
| 115 | 10425 101481 4/3/92 | 30 5 1/2 | 8 | Hard. 5Y(4.3) Olive weathered shale, dry End 30ft boring at 117'. Core 5ft rock see Rock Log | Sh | >4.0 | HNu = 0ppm RS = 500ppm |
| 110 | | | | | | | |

NOTES:
 Drilling Contractor: Ann Drill
 Drilling Equipment: 43Cyclo
 Driller: Joe Barilla
Craig Carter

SAA - same as ABOVE
 NA - not applicable

See p. 1

VISUAL CLASSIFICATION OF ROCK

PROJECT NUMBER 1002.03.01.04 FIELD ENG./GEO. D. O'Brien PAGE 20 OF 22
 PROJECT NAME ELWMT BORING NO. 2754
 APPROX. ELEV. _____ CORE SIZE 2 inch DATE 4/8/92
 DRILLING METHOD Cable Tool / Auger DATE STARTED 4/8/92
 COORDINATES _____ DATE COMPLETED 4/8/92

| CASING INFORMATION | | GROUNDWATER LEVEL DATA | | | |
|--------------------|-------|------------------------|-------|-------------|-------|
| SIZE | DEPTH | ACTUAL TIME | DEPTH | ACTUAL TIME | DEPTH |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

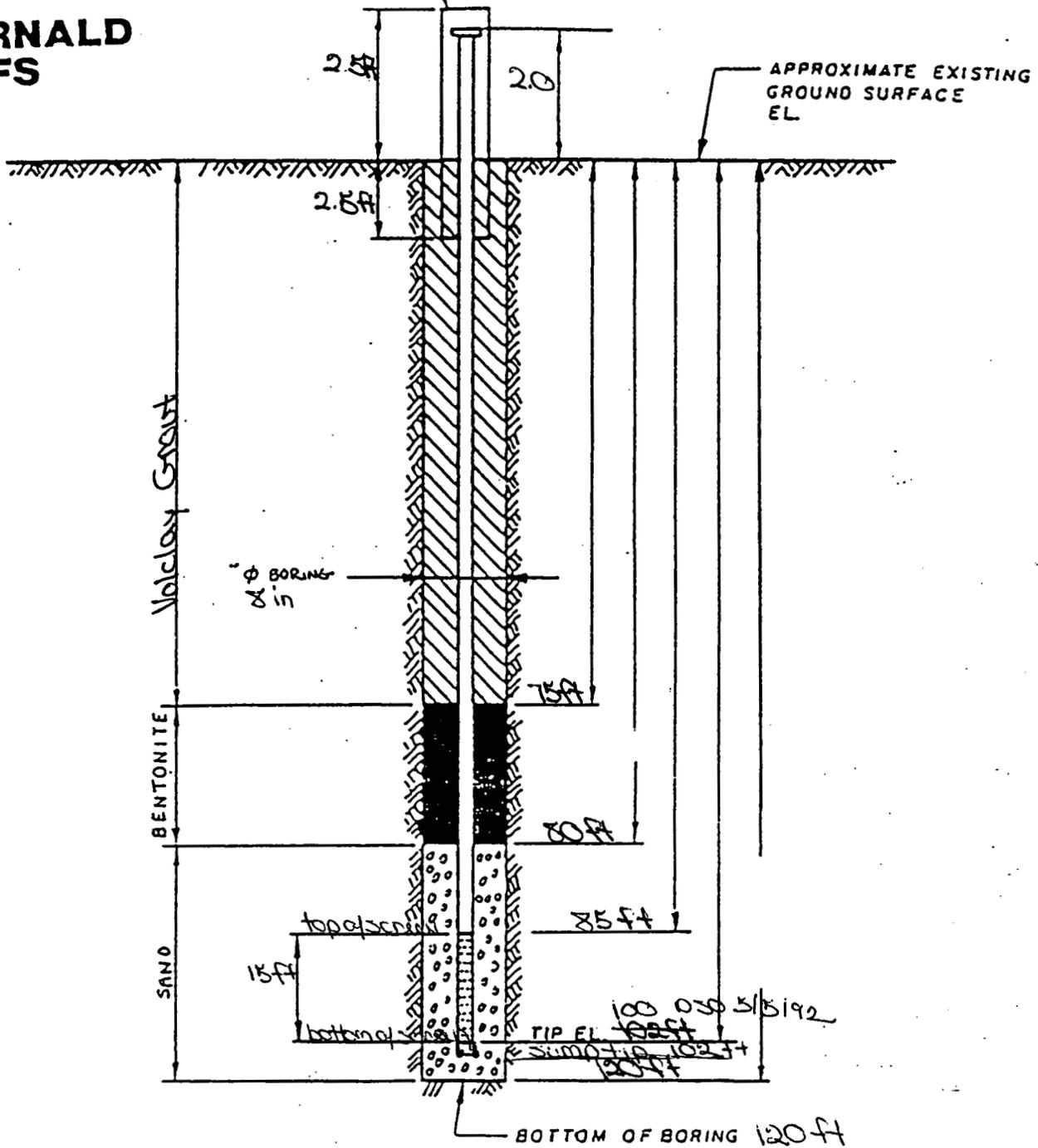
| RUN NUMBER | DEPTH (ft) | RECOVERY (ft) | IN % RECOVERY | % ROD | DESCRIPTION | JOINT SPACING | | | REMARKS |
|------------|------------|---------------|---------------|-------|--|---------------|---------|---------|----------------------------|
| | | | | | | MAXIMUM | MINIMUM | AVERAGE | |
| 1025 | 115 | | | | Very hard. By (B/I) Gray clayey weathered shale, thinly laminated. | | | | Mn = 0 ppm Pb = 500 ppm |
| 101682 | | | | | SAA | | | | |
| 418192 | | | | | SAA | | | | |
| | 116 | | | | SAA | | | | |
| | | | | | SAA | | | | |
| | | | | | SAA | | | | |
| | 117 | | | | SAA | | | | |
| | | | | | SAA | | | | |
| | | | | | SAA | | | | |
| | 118 | | | | SAA | | | | |
| | | | | | SAA | | | | |
| | | | | | SAA | | | | |
| | 119 | | | | SAA | | | | |
| | | | | | No Recovery | | | | |
| | 120 | | | | Boring terminated at 120' | | | | |

21 of 22

Hinge cover w/ padlock 3289

**FERNALD
RI/FS**

PROTECTIVE RISER CASING



DRAWING NUMBER

CHECKED BY
APPROVED BY

DRAWN BY

NOTES:

1. RISER PIPE IS 4 IN 10. SCHEDULE PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 4 IN 1.0316 PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE)
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL NA Dry
5. WATER LEVEL READING ON 4/22/92

INSTALLATION DETAILS
MONITORING WELL 2754

PREPARED FOR ELWMAF

Geologist: D. O'Brien

Materials used during drilling
11 bags sand
3 buckets bentonite
15 bags Volclay
1000 gal. water

16 Drums generated on this boring/monitoring well

MONITORING WELL / **PIEZOMETER INSTALLATION SHEET**

PROJECT NAME ELUMF FIELD ENG./GEO. D.O'Brien DATE 4/22/92
 PROJECT NO. W02 OS. 01.04 CHECKED BY _____ DATE _____
 BORING NO. 2154
 PIEZOMETER NO. 2754 DATE OF INSTALLATION 4/22/92
 (S) 5/4/92 Monitoring Well

BOREHOLE DRILLING

| | |
|---|--|
| DRILLING METHOD <u>Cable Tool</u> | TYPE OF BIT <u>Churn Bit</u> |
| DRILLING FLUID (S) USED: FLUID <u>H₂O</u> FROM <u>0.0</u> TO <u>120 Ft</u> FLUID <u>NA</u> FROM <u>-</u> TO <u>-</u> | CASING SIZE (S) USED: SIZE <u>8.0</u> inch FROM <u>0</u> TO <u>115 Ft</u> SIZE <u>NA</u> FROM <u>-</u> TO <u>-</u> |

PIEZOMETER DESCRIPTION

| | |
|---|--|
| TYPE <u>Monitoring Well</u> | RISER PIPE MATERIAL <u>Stainless steel</u> |
| DIAMETER OF PERFORATED SECTION <u>4.0 in</u> | RISER PIPE DIAMETERS: O.D. <u>4 3/8 in.</u> I.D. <u>4.0 in.</u> |
| PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/> | LENGTH OF PIPE SECTIONS <u>102 Ft</u> |
| AVERAGE SIZE OF PERFORATIONS <u>0.010 in</u> | JOINING METHOD <u>Flush mount</u> |
| TOTAL PERFORATED AREA <u>15 Ft</u> | <u>threads</u> |

PROTECTION SYSTEM

| | |
|--|---|
| RISER PROTECTIVE PIPE LENGTH <u>3.0 Ft</u> | OTHER PROTECTION <u>Hinged locking cover with padlock</u> |
| PROTECTIVE PIPE O.D. <u>10 3/4 inch</u> | |

| ITEM | DISTANCE ABOVE / BELOW GROUND SURFACE (Ft) | | ELEVATION () | | |
|---------------------------|--|------------|---------------|--------|--------|
| | TOP | BOTTOM | TOP | BOTTOM | |
| TOP OF RISER PIPE | 2.5 | | | | |
| GROUND SURFACE | 0.0 | | | | |
| BOTTOM OF PROTECTIVE PIPE | 2.5 | | | | |
| BOREHOLE FILL MATERIALS: | | | | | |
| | GROUT / SLURRY | TOP 0 | BOTTOM 75 | TCP | BOTTOM |
| | BENTONITE | TOP 75 | BOTTOM 80 | TOP | BOTTOM |
| | SAND | TOP 80 | BOTTOM 104 | TOP | BOTTOM |
| GRAVEL | TOP NA | BOTTOM NA | TOP | BOTTOM | |
| PERFORATED SECTION | TOP 85 | BOTTOM 100 | TOP | BOTTOM | |
| PIEZOMETER TIP | 102' | | | | |
| BOTTOM OF BOREHOLE | 120' | | | | |
| GWL AFTER INSTALLATION | NA | | | | |

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO

REMARKS _____

VISUAL CLASSIFICATION OF SOILS

3289

| | | |
|--------------------------------|---------------------------------|-------------------------|
| PROJECT NUMBER: 602.03.01.04 | PROJECT NAME: EWMF | |
| BORING NUMBER: 1754 | COORDINATES: | DATE 4/23/92 |
| ELEVATION: | GWL: Depth NA Date/Time 4/27/92 | DATE STARTED: 4/23/92 |
| ENGINEER/GEOLOGIST: D. O'Brien | Depth Date/Time | DATE COMPLETED: 4/27/92 |
| DRILLING METHODS: Cable Tool | PAGE 1 | OF 13 |

| DEPTH (Fe) | SAMPLE TYPE & NO | BLOWS ON SAMPLER PER 6 in | RECOVERY (IN) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|------------|------------------|---------------------------|---------------|--|-------------|----------------------------|---|
| 0 | | | | See boring 2754 for Visual Classification | | | |
| 10 | 440 41254 | 13 | | v. stiff. loyr (5/4) yellowish brown granully clay, no plasticity slightly moist | cl | 3.0 | H ₂ O = 0 ppm R ₈ = 40 cpm |
| 15 | | | | See boring 2754 for Visual Classification | | | |
| 20 | | | | | | | |
| 25 | | | | | | | |
| 30 | | | | END OF BORING 30' | | | |

NOTES:
 Drilling Contractor: Penn Drill
 Drilling Equipment: 43 Cyclone
 Driller: Craig Coulter
 Joe Barile

5 D50 4/23/92
 Bkgd: H₂O = 0 ppm
 R₈ = 40-60 cpm

Samples collected per ASTM Standard Penetration Test. Colors identified by using Munsell Color Chart

**FERNALD
RI/FS**

PROTECTIVE RISER CASING

Hinged cover with padlock

APPROXIMATE EXISTING
GROUND SURFACE
EL

2.8 Fe

2.0 Fe

2.8 Fe

Volclay Grout

8.0" ϕ BORING

NA

NA

Volclay Grout
BENTONITE

Top of Sand Pack

5.0 Fe

SAND

Top of Screen

15.0 Fe

10.0 Fe

Bottom of screen

TIP EL 25.0 Fe

30.0 Fe

BOTTOM OF BORING - 30.0 Fe

NOTES:

1. RISER PIPE IS 4 IN 10. SCHEDULE 316 SS PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 4 IN 1.0 316 SS PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE)
3. LOWER END OF SCREEN IS CAPPED. [with welded silt trap]
4. ELEVATION OF WATER LEVEL NA - Dry
5. WATER LEVEL READING ON NA - 4/27/92

INSTALLATION DETAILS
MONITORING WELL 1784

PREPARED FOR EGUMF

Geologist: D. O'Brian

Material used during drilling

3 Drums generated on this well - soil

3 bags Volclay grout
3 bags bentonite
3 bags sand

Monitoring Well / **PIEZOMETER INSTALLATION SHEET**

PROJECT NAME ELWMA FIELD ENG./GEO. D. O'Brien DATE 4/27/92
 PROJECT NO. 602.03.01.04 CHECKED BY C. Grube DATE 5/4/92
 BORING NO. 1754
 PIEZOMETER NO. 1754 DATE OF INSTALLATION 4/27/92
 Monitoring Well
BOREHOLE DRILLING

| | |
|--|--|
| DRILLING METHOD <u>Cable Tool</u> | TYPE OF BIT <u>Churn Bit</u> |
| DRILLING FLUID(S) USED: FLUID <u>H₂O</u> FROM <u>0</u> TO <u>30</u> FLUID <u>NA</u> FROM <u>-</u> TO <u>-</u> | CASING SIZE(S) USED: SIZE <u>8"</u> FROM <u>0</u> TO <u>30'</u> SIZE <u>NA</u> FROM <u>-</u> TO <u>-</u> |

PIEZOMETER DESCRIPTION

| | |
|---|--|
| TYPE <u>Monitoring Well</u> | RISER PIPE MATERIAL <u>stainless steel</u> |
| DIAMETER OF PERFORATED SECTION <u>4"</u> | RISER PIPE DIAMETERS: O.D. <u>4 1/4"</u> I.D. <u>4 3/8"</u> |
| PERFORATION TYPE: SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input checked="" type="checkbox"/> | LENGTH OF PIPE SECTIONS <u>10' screen 20ft riser</u> |
| AVERAGE SIZE OF PERFORATIONS <u>0.010</u> | JOINING METHOD <u>flush joint threaded</u> |
| TOTAL PERFORATED AREA <u>10 ft.</u> | |

PROTECTION SYSTEM

| | |
|--|--|
| RISER PROTECTIVE PIPE LENGTH <u>5.0 ft</u> | OTHER PROTECTION <u>hinged locking cap</u> |
| PROTECTIVE PIPE O.D. <u>10 3/4 inch</u> | |

| ITEM | DISTANCE ABOVE / BELOW GROUND SURFACE (ft) | | ELEVATION () | |
|---------------------------|--|-------------|---------------|--------|
| | TOP | BOTTOM | TOP | BOTTOM |
| TOP OF RISER PIPE | 2.0 ft | | | |
| GROUND SURFACE | 0.0 | | | |
| BOTTOM OF PROTECTIVE PIPE | 2.5 | | | |
| BOREHOLE FILL MATERIALS: | | | | |
| GROUT / SLURRY | TOP 0.0 | BOTTOM 15.0 | TCP | BOTTOM |
| BENTONITE | TOP NA | BOTTOM NA | TOP | BOTTOM |
| SAND | TOP 15.0 | BOTTOM 30.0 | TOP | BOTTOM |
| GRAVEL | TOP NA | BOTTOM NA | TOP | BOTTOM |
| PERFORATED SECTION | TOP 18.0 | BOTTOM 28.0 | TOP | BOTTOM |
| PIEZOMETER TIP | 28 30.0 | | | |
| BOTTOM OF BOREHOLE | 30.0 | | | |
| GWL AFTER INSTALLATION | NA | | | |

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO

REMARKS _____

VISUAL CLASSIFICATION OF SOILS

| | | |
|---|--|------------------------|
| OBJECT NUMBER: 602.50.03.03 | PROJECT NAME: FEMP RI/FS | |
| BORING NUMBER: 3552 | COORDINATES: | DATE: 3-31-92 |
| ELEVATION: | GWL: Depth 6.92 ft Date/Time 4-8-92 / 1000 | DATE STARTED: 3-31-92 |
| ENGINEER/GEOLOGIST: Ken Marion | Depth Date/Time | DATE COMPLETED: 4-8-92 |
| DILLING METHODS: Cable Tool 10" drill bit | PAGE 1 | OF 8 |

| DEPTH (ft.) | SAMPLE TYPE & NO. | BLOWS ON SAMPLER PER 6 IN. | RECOVERY (in.) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|-------------|-------------------|----------------------------|----------------|--|-------------|----------------------------|--|
| 0 | | | | See the visual classification of soils sheets for boring 2552 for the soil descriptions of the interval between 0 and 25 ft. | | | |
| 12 | | | | ▽ | | | The W.L. is 6.92 ft. below the ground surface. |
| 0 | | | | | | | |

Drilling Company: Pennsylvania Drilling
 Driller: Dave Newman
 Assistant Driller: Bob Johnson

Samples Collected per ASTM Standard Penetration Test
 Colors Identified using Munsell color chart.

3-31-92
 Hwy S/N: 71111 } Background
 Bldg S/N: 50741 } Levels
 Box S/N: 73918 } 0 ppm
 30 cpm

VISUAL CLASSIFICATION OF SOILS

| | | |
|--|--|------------------------|
| OBJECT NUMBER: 602-50.03.03 | PROJECT NAME: FEMP RI/FS | |
| RING NUMBER: 3552 | COORDINATES: | DATE: 3-31-92 |
| ELEVATION: | GWL: Depth 6.92' Date/Time 4-8-92/1000 | DATE STARTED: 3-31-92 |
| ENGINEER/GEOLOGIST: Ken Marion | Depth Date/Time | DATE COMPLETED: 4-8-92 |
| DRILLING METHODS: Cable Tool 10" drill bit | | PAGE 2 OF 8 |

| ft. | SAMPLE TYPE & NO. | BLOWS ON SAMPLER PER 16 IN. | RECOVERY (in) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|-----|---------------------------|-----------------------------|---------------|--|-------------|----------------------------|---|
| 6 | 069951 1635 3-31-92 | 7 12 12 | 18 | Medium dense grayish brown (2.54, 5/2) well graded SAND with gravel, wet | SW | N/A | H _{nu} = 0 ppm B _γ = 30 cpm α = 0 cpm |
| 5 | | | | | | | |
| 0 | 069952 0900 4-1-92 | 6 10 12 | 11 | Medium dense grayish brown (2.54, 5/2) well graded SAND with trace gravel, wet | SW | N/A | H _{nu} = 0 ppm B _γ = 30 cpm α = 0 cpm |
| 5 | | | | | | | |
| 0 | 069953 0914 4-1-92 | 8 9 12 | 12 | Same As Above | SW | N/A | H _{nu} = 0 ppm B _γ = 30 cpm α = 0 cpm |
| 5 | | | | | | | |
| 0 | | | | | | | |

See page 1

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VISUAL CLASSIFICATION OF SOILS

| | | |
|--|--|------------------------|
| PROJECT NUMBER: 602.50.03.03 | PROJECT NAME: FEMP RI/FS | |
| RING NUMBER: 3552 | COORDINATES: | DATE: 4-1-92 |
| ELEVATION: | GWL: Depth 6.92 ft Date/Time 4-8-92 / 1000 | DATE STARTED: 3-31-92 |
| ENGINEER/GEOLOGIST: Ken Marion | Depth Date/Time | DATE COMPLETED: 4-8-92 |
| DRILLING METHODS: Cable Tool 10" drill bit | | PAGE 3 OF 8 |

| DEPTH (ft) | SAMPLE TYPE & NO. | BLOWS ON SAMPLER PER 16 in. (16 in.) | RECOVERY (in.) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|------------|----------------------------------|--------------------------------------|----------------|---|-------------|----------------------------|---|
| 5.0 | 069954 1005 4-1-92 | 13 19 22 | 13 | Dense grayish brown (2.54, 5/2) SANDY "PEA" GRAVEL, wet | GP | N/A | H _{nu} = 0 ppm B _σ = 30 cpm α = 0 cpm |
| 10.0 | 069955 1100 4-1-92 | 7 7 7 | 18 | Medium dense grayish brown (2.54, 5/2) SAND and GRAVEL, wet (well graded) | SW/GW | N/A | H _{nu} = 0 ppm B _σ = 30 cpm α = 0 cpm |
| 15.0 | 069956 1355 1355 4-1-92 | 21 21 22 | 18 | Dense grayish brown (2.54, 5/2) GRAVELLY SAND, wet (well graded) | SW | N/A | H _{nu} = 0 ppm B _σ = 30 cpm α = 0 cpm |

NOTES
See Page 1

VISUAL CLASSIFICATION OF SOILS

| | | |
|--|--|------------------------|
| OBJECT NUMBER: 602.50.03.03 | PROJECT NAME: FEMP RI/FS | |
| BORING NUMBER: 3552 | COORDINATES: | DATE: 4-1-92 |
| ELEVATION: | GWL: Depth 6.92 ^{ft} Date/Time 4-8-92 | DATE STARTED: 3-31-92 |
| ENGINEER/GEOLOGIST: Ken Marion | Depth Date/Time | DATE COMPLETED: 4-8-92 |
| DRILLING METHODS: Cable Tool 10" drill bit | | PAGE 4 OF 8 |

| DEPTH (ft.) | SAMPLE TYPE & NO. | BLOWS ON SAMPLER PER 6 ft. 1 | RECOVERY (in.) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|-------------|--------------------------|------------------------------|----------------|--|-------------|----------------------------|--|
| 5 | 069957 M30 4-1-92 | 1 2 | 18 | Very loose grayish brown (2.5 S_u 5/2) SAND with trace gravel, wet (well graded) | SW | N/A | H _{nu} = 0 ppm B ₀ = 30 cpm α = 0 cpm |
| 5 | 069958 1517 4-1-92 | 1 1 | 0 | No Recovery | N/A | N/A | |
| 5 | 069959 1655 4-1-92 | 2 3 5 | 0 | No Recovery | N/A | N/A | |

See Page 1

VISUAL CLASSIFICATION OF SOILS

| | | |
|--------------------------------|---|---------------------------------|
| OBJECT NUMBER: 602.50.03.03 | PROJECT NAME: FEMP RI/FS | K.M. 4-3-92 |
| RING NUMBER: 3552 | COORDINATES: | DATE: 3-31-92 4-2-92 |
| ELEVATION: | GWL: Depth 6.92 ^{ft} Date/Time 4-8-92/1000 | DATE STARTED: 3-31-92 |
| ENGINEER/GEOLOGIST: Ken Marion | Depth Date/Time | DATE COMPLETED: 4-8-92 |
| DILLING METHODS: Cable Tool | 10" drill bit | PAGE 5 OF 8 |

| DEPTH (ft.) | SAMPLE TYPE & NO. | BLOWS ON SAMPLER PER 16 (in.) | RECOVERY (in.) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (ISF) | REMARKS |
|-------------|--------------------------|-------------------------------|----------------|--|-------------|----------------------------|---|
| 5 | 069960 0900 4-2-92 | 2 7 22 | 12 | Medium dense grayish brown (2.5 ₄ , 5/2) SAND with trace gravel, wet (well graded) | SW | N/A | H _{nu} = 0 ppm B _σ = 30 cpm α = 0 cpm |
| 0 | 069961 1019 4-2-92 | 2 7 | 6 | Same As Above | SW | N/A | H _{nu} = 0 ppm B _σ = 30 cpm α = 0 cpm |
| 5 | 069962 1120 4-2-92 | 7 16 13 | 10 | Medium dense light olive brown (2.5 ₄ , 5/3) SAND with a little gravel, wet (well graded) | SW | N/A | H _{nu} = 0 ppm B _σ = 30 cpm α = 0 cpm |

See Page 1

VISUAL CLASSIFICATION OF SOILS

| | | |
|---|---|------------------------|
| OBJECT NUMBER: 602.50.03.03 | PROJECT NAME: FEMP RI/FS | |
| RING NUMBER: 3552 | COORDINATES: | DATE: 4-2-92 |
| ELEVATION: | GWL: Depth 6.92 ^{ft} Date/Time 4-8-92/1000 | DATE STARTED: 3-31-92 |
| ENGINEER/GEOLOGIST: Ken Marion | Depth Date/Time | DATE COMPLETED: 4-8-92 |
| DILLING METHODS: Cable Tool 10" drill bit | PAGE 6 OF 8 | |

| DEPTH (ft.) | SAMPLE TYPE & NO. | BLOWS ON SAMPLER PER 6 in. | RECOVERY (in.) | DESCRIPTION | USCS SYMBOL | MEASURED CONSISTENCY (TSF) | REMARKS |
|-------------|--------------------------|----------------------------|----------------|--|-------------|----------------------------|---|
| 20 | 066963 1430 4-2-92 | 7 22 10 | 12 | Dense Light Yellowish brown (2.54, 6/3) SAND and GRAVEL, wet (well graded) | SW/GW N/A | N/A | H _{nu} = 0 ppm B ₈ = 30 cpm α = 0 cpm |
| 5 | | | | Bottom of Bore Hole Drilled to 90.0 ft. Split spoon sampled to 91.5 ft | | | |

NOTES:
See page 1

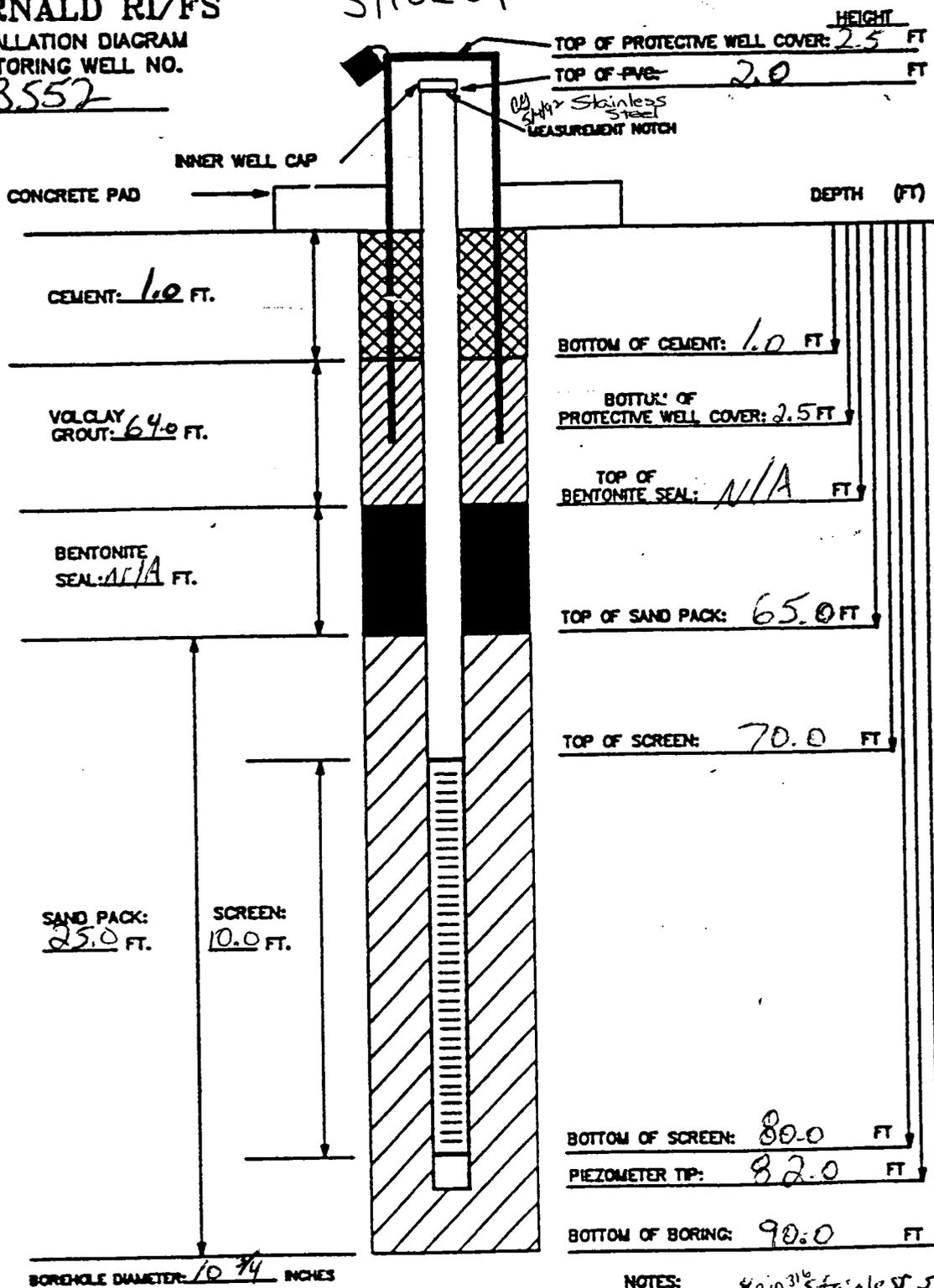
INSTALLATION DATE: 4-8-92

FERNALD RI/FS

INSTALLATION DIAGRAM
MONITORING WELL NO.

3552

Stickups



MATERIALS USED:

SAND TYPE AND QUANTITY: 16 bags - 10/20 sand.
 BENTONITE PELLETS (5-GALLON BUCKETS): N/A.
 BAGS OF VOLCLAY GROUT: 11 sacks
 AMOUNT OF CEMENT: 1/2 bag
 AMOUNT OF WATER USED: 500 gallons
 OTHER: 15 Soil Drums generated

NOTES:

- 1) RISER PIPE IS 4.0 in ^{3/16} stainless steel pipe (U) 5/5/92
- 2) SCREEN IS 3-INCH I.D. SCHEDULE 40 4 in. I.D. 316 stainless steel pipe with 0.060-INCH SLOTS. 0.06 in. slots
- 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED SLUMP. or welded slump
- 4) WATER DEPTH/DATE: 6.92 / 4-8-92

TASK: 602.50.03.03 GEOLOGIST/ENGINEER: Ken Marion

**FERNALD
RI/FS**

Monitoring Well / **PIEZOMETER INSTALLATION SHEET**

PROJECT NAME FEMP RI/FS FIELD ENG./GEO. Ken Marion DATE 4-8-92
 PROJECT NO. 602-50-03-03 CHECKED BY C. Brube DATE 5/5/92
 BORING NO. 3552
 PIEZOMETER NO. N/A 3552 DATE OF INSTALLATION 4-8-92
 BOREHOLE DRILLING CB/S/92

| | |
|--|--|
| DRILLING METHOD <u>Cable Tool</u> | TYPE OF BIT <u>10" churn bit</u> |
| DRILLING FLUID(S) USED: | CASING SIZE(S) USED: |
| FLUID <u>Water</u> FROM <u>0</u> TO <u>90.0 ft</u> | SIZE <u>10 in.</u> FROM <u>0</u> TO <u>90.0 ft</u> |
| FLUID <u>N/A</u> FROM <u>-</u> TO <u>-</u> | SIZE <u>N/A</u> FROM <u>-</u> TO <u>-</u> |

PIEZOMETER DESCRIPTION

| | |
|--|---|
| TYPE <u>Stainless Steel</u> | RISER PIPE MATERIAL <u>3/6 Stainless steel</u> |
| DIAMETER OF PERFORATED SECTION <u>4.0 in.</u> | RISER PIPE DIAMETERS: |
| PERFORATION TYPE: | O.D. <u>4 3/8 in.</u> I.D. <u>4.0 in.</u> |
| SLOTS <input checked="" type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/> | LENGTH OF PIPE SECTIONS <u>1-2 ft. sump</u> <u>1-2 ft. stick-up</u> <u>1-10 ft. screen</u> <u>7-10 ft. risers</u> |
| AVERAGE SIZE OF PERFORATIONS <u>0.6 in.</u> | JOINING METHOD <u>Threaded flush jointed</u> |
| TOTAL PERFORATED AREA <u>10.0 ft.</u> | |

PROTECTION SYSTEM

| | |
|---|--|
| RISER PROTECTIVE PIPE LENGTH <u>5.0 ft.</u> | OTHER PROTECTION <u>Steel well cover</u> |
| PROTECTIVE PIPE O.D. <u>10 3/4 in.</u> | <u>with lock</u> |

| ITEM | DISTANCE ABOVE/BELOW GROUND SURFACE (ft.) | | ELEVATION (ft.) | |
|--|---|-------------|-----------------|------------|
| TOP OF RISER PIPE | 2.5 | | | |
| GROUND SURFACE | 0.0 | | | |
| BOTTOM OF PROTECTIVE PIPE | 2.5 | | | |
| BOREHOLE FILL MATERIALS: <u>Cement</u> GROUT/SLURRY BENTONITE SAND GRAVEL | TOP 0.0 | BOTTOM 1.0 | | |
| | TOP 1.0 | BOTTOM 65.0 | TOP | BOTTOM |
| | TOP N/A | BOTTOM N/A | TOP N/A | BOTTOM N/A |
| | TOP 65.0 | BOTTOM 90.0 | TOP | BOTTOM |
| | TOP N/A | BOTTOM N/A | TOP N/A | BOTTOM N/A |
| PERFORATED SECTION | TOP 70.0 | BOTTOM 80.0 | TOP | BOTTOM |
| PIEZOMETER TIP | 82.0 | | | |
| BOTTOM OF BOREHOLE | 90.0 | | | |
| GWL AFTER INSTALLATION | 6.92 | | | |

IS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 IS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO

REMARKS The Temporary casing was removed upon the installation of the well

The utility used to decompress these files is PKZIP and a copy of PKUNZIP is included on the disk so that the files can be decompressed.

To decompress the files, insert the disk into the appropriate drive. Direct DOS to that drive, either A: or B:. Once an A:\ or B:\ prompt has been returned, the data can be decompressed to a hard disk where Lotus resides.

An example:

```
A:\open c:\Lotus
```

This example directs the decompression routine to place the decompressed files in the c:\Lotus directory. Any valid path can be used after the OPEN command.

After the files have been decompressed, one may access them by using Lotus. The files have been labeled in the following manner:

TPOCT.WK1 contains Temperature and Pressure readings for the month of October at the K-65 silos.

OCT.WK1 contains the averaged data from the month of October, this data was tabulated from RNOCT1.WK1 through RNOCT5.WK1.

RNOCT1.WK1 contains the data collected from instrumentation for the first week of October. RNOCT2.WK1 would be for the second week, etc.

All of this data are raw and are readings taken directly from the instrumentation and recorded. The data in the reports are simple reductions of the raw data to show trends.