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**CONSOLIDATED CONSENT AGREEMENT/
FEDERAL FACILITY COMPLIANCE
AGREEMENT/FEDERAL FACILITY AGREEMENT
MONTHLY PROGRESS REPORT PERIOD ENDING
MAY 31, 1992**

06/19/92

**DOE-FN/EPA
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REPORT**

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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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 May 1 through May 31, 1992 and planned actions for the period June 1 through June 30, 1992.

Highlights of activities in May include the following:

- The Bentonite Effectiveness Environmental Monitoring Report (from Removal Action No. 4, Silos 1 and 2) was transmitted to the U.S. EPA on May 22, 1992.
- The liquid pumped from the K-65 decant sump tank (Removal Action No. 5) was treated during May.
- The FEMP received approval from DOE-NV to dispose of five general waste streams: process area scrap wastes (i.e., scrap metal and wood), construction/removal action waste (i.e., demolition debris), low/high grade residues, thorium waste (i.e., refinery feed, oxides), and bailed trash. Contingent upon meeting all DOE-NV Waste Acceptance Criteria, any or all of these waste streams may be shipped to NTS for disposal. The approved general waste streams include all backlog and currently generated wastes at the FEMP.
- A construction contractor for Removal Action No. 10, Active Flyash Pile Controls, was selected on May 29.
- Conditional approval for the Removal Action No. 13, Plant 1 Ore Silos, Work Plan was received from the U.S. EPA on May 18.
- Conditional approval for the Removal Action No. 14, Contaminated Soils Adjacent to Sewage Treatment Incinerator, Work Plan was received from the U.S. EPA on May 18.

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Introduction (continued)

- Conditional approval for the Removal Action No. 15, Scrap Metal Piles, Work Plan was received from the U.S. EPA on May 18.
- The Eimco Filter Operability Test, for Removal Action No. 20, Stabilization of UNH Inventories, was completed in May.
- Responses to the U.S. EPA and Ohio EPA comments on the Removal Action No. 3, South Groundwater Contamination Plume, Part 1 Work Plan and a revised Attachment 1, Pre-excavation Field Screening and Soil Sampling and Analysis Plan, were submitted to the U.S. EPA and Ohio EPA on May 8, 1992
- Responses to the U.S. EPA and Ohio EPA comments on the Removal Action No. 3, South Groundwater Contamination Plume; Part 2/3 Work Plan and a revised Attachment 1, Soil and Rubble Sampling and Analysis Plan, were submitted to the U.S. EPA and Ohio EPA on May 8, 1992
- A Revised Work Plan for Removal Action No. 16, Collect Uncontrolled Production Area Runoff - Northeast, was issued to the U.S. EPA and Ohio EPA on May 21, 1992.
- Work Procedures for Removal Action No. 26, Asbestos Removals (Asbestos Program) were submitted to U.S. EPA on May 19, 1992.

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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 May 1992, approximately 20,900 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 May 1992, approximately 75,100 gallons of perched water have been collected for treatment from Plant 2/3 and approximately 51,800 gallons of perched water have been collected for treatment from Plant 8. Direct piping to the Plant 8 treatment system from the Plant 2/3 wells was completed in May.

Plant 9 - Pumping from Plant 9 began on August 20, 1991. Approximately 17,600 gallons of Plant 9 perched water have been extracted and collected through May 1992.

Plant 8 - The startup date for the Plant 8 treatment system was July 24, 1991. Through May 1992, approximately 159,300 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. Seven of the eight construction sequences for the Waste Pit Area Runoff Control Removal Action are completed. This Removal Action is 88% complete.

Activities in May included piping and pump installation, completion of trench work north of the sump, bentomat placement at north and east detention areas, and substantial completion of pump testing.

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

Planned activities for June include the completion of construction acceptance testing, start of systems operability testing, and completion of bentonite lined detention area. Also planned for June is the completion of the project's administrative requirements.

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 (Albright and Wilson and Delta Steel) was approved by the U.S. EPA on January 3, 1991. Subsequently, Delta Steel was deleted from the current scope of the project with approval of the U.S. EPA and Ohio EPA. A summary of the most recent and ongoing activities for Part 1 are listed below:

- Responses to the U.S. EPA and Ohio EPA comments on the Part 1 Work Plan and a revised Attachment 1, Pre-excavation Field Screening and Soil Sampling and Analysis Plan, were submitted to the U.S. EPA and Ohio EPA on May 8, 1992.
- DOE-FN began construction of Part 1 on a limited basis (Phase I). Field work began at Albright and Wilson on May 26, 1992, and will proceed north on the three contiguous properties where access has been obtained.
- A request for schedule extension was forwarded to U.S. EPA on April 24, 1992. The request was rejected by the U.S. EPA on May 27, 1992. Supplemental information in response to U.S. EPA inquiries was prepared.

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 183B, 2B - Manhole 183B to Great Miami River (2B1) and aeration facility (2B2), 2C - Recovery well field, and 2D - Test well installation and pump test. Part 2 follow-on activities include:

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

- Responses to the U.S. EPA and Ohio EPA comments on the Parts 2/3 Work Plan and a revised Attachment 1, Soil and Rubble Sampling and Analysis Plan, were submitted to the U.S. EPA and Ohio EPA on May 8, 1992.
- Construction Package 2A is on hold due to problems involving access to properties. The DOE-FN is evaluating the possibilities to start construction with manageable risk in late June, 1992.
- Property appraisals for Construction Packages 2A, 2B, 2C, and 2D are underway.
- Construction Package 2B1 (Outfall Cofferdam) was certified for construction (CFC) on May 11, 1992.
- The 50% Design Package for the Aeration Facility (Construction Package 2B2) was reviewed.
- The Design for Construction Packages 2C and 2D (recovery wells and pump test) continues.

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 Storm Water Retention Basin (IAWWT[SWRB]) will consist of two trailer-mounted assemblies, each with a nominal 150 gpm capacity or a total 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 general contractor is finishing grading work required at the IAWWT(SWRB) construction site.
- Assembly of the IAWWT(SWRB) Utilities Building continues.

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

- The first skid-mounted treatment equipment assembly for the IAWWT (SWRB) unit was shipped from the vendor in Pennsylvania to the final assembly shop in Elkhart, Indiana on May 27, 1992. The first assembly will be installed in its respective trailer and the completed assembly is scheduled to arrive at the FEMP on June 9, 1992.
- Construction contractor was mobilized on May 5, 1992, for construction of the IAWWT(BDN-ETS) unit. Construction continues on schedule for completion date of June 30, 1992.

Part 4

Part 4 of the South Groundwater Contamination Plume Removal Action Work Plan involves groundwater monitoring and institutional controls.

- A purchase requisition was submitted to Procurement for the purchase and installation of two ion exchange systems to be supplied by Culligan Water Conditioning at two private residences where a common well has been affected by the South Groundwater Contamination Plume. A meeting was held with representatives of WEMCO and the Culligan Water conditioning contractor on May 11, 1992, to explain the ion exchange system that is to be installed.
- A signed Entry Approval for sampling Groundwater Well Number 2002 located on the Earl J. Weber property was received May 20, 1992. This Entry Approval will allow sampling in June, September, and December of 1992, and quarterly, thereafter.

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.

- Access to CSX property is holding up implementation of this project.
- Due to access expiration problems, it has been decided to install all hydropunching at one time.

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

Work in June for RA No. 3, Parts 1 - 5 will focus on continued construction on Phase I of Part 1 and submittal of additional information to support the request for schedule extension; CFC of the aeration facility design (2B2); complete and issue for review the 100 % Part 2C and 2D design packages; complete Part 2A, 2B, 2C, and 2D property appraisals and negotiate with owners; begin construction of Package 2A; and install ion exchange units at two private residences.

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 Environmental 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 Environmental Monitoring Plan was received on April 24, 1992. On May 22, 1992, the Bentonite Effectiveness Environmental Monitoring Report was transmitted to U.S. EPA.

Also in May, 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.

Work in June will include continuation of the calibration and checkout of the data logging system and the preparation of the Bentonite Effectiveness Environmental Monitoring Report for data collected in May. All parameters will be put into the ISC computer model for transmittal of the report by June 30, 1992.

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.

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RA No. 4, Silos 1 and 2 (continued)

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 to EPA - 1st run 4/92	Completed May 22, 1992	May 22, 1992

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 was treated by the FEMP Wastewater Treatment Facility. Treatment of the decant liquid based on the MEF and available analytical results was completed on May 12, 1992.

Work in June 1992 will include initiating the Removal Action final report.

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 involved the placement of air monitors to augment the site requirements for estimating the off-site releases of potentially harmful contaminants. The installation of the air monitors is substantially complete.

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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 May included the procurement of materials and completion of excavation of the soil for the Phase II work. Implementation for the post-excavation sampling of the Phase II area is 95% complete. Installation of the Phase II pad is 47% complete.

Activities in June will include the continued installation of the Phase II pad 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 barrier 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 May 1992, 8,450 drum equivalents (DE) of low-level waste (LLW) were dispositioned. The May goal for shipments was 9,581 DEs. The FY1992 cumulative total LLW shipped is 62,364 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

The FEMP received approval from DOE-NV to dispose of five general waste streams: process area scrap wastes (i.e., scrap metal and wood), construction/removal action waste (i.e., demolition debris), low/high grade residues, thorium waste (i.e., refinery feed, oxides), and baled trash. Contingent upon meeting all DOE-NV Waste Acceptance Criteria any or all of these waste streams may be shipped to NTS for disposal. The approved general waste streams include all backlog and currently generated wastes at the FEMP.

The FEMP is about 2,800 Des behind schedule with respect to the disposal of 100,000 DEs in FY1992. This represents slightly more than one week's schedule. The deficit is due primarily to material handling equipment shortages and breakdowns and the increased control on Radioactive Contamination Areas (DOE Order 5480.11 implementation). Additional equipment has been contracted to be leased or purchased. In order to make up the deficit, increased emphasis is being placed on scrap metal and wood loading, as well as reloading faulty sealands.

Activities scheduled for June include the first Low Level Thorium Waste shipments, the shipping of 10,340 DEs of LLW, the delivery of a new 30 ton fork lift and five 8,000 pound fork trucks to the FEMP to alleviate the material handling equipment shortage, and the entrance of the manifest data for the FY1992 NTS shipments into the Administrative Record. Also, the annual update for the RA No. 9 compendium of procedures will be submitted to U.S. EPA on June 30, 1992. In order to provide a more concise and understandable document the two original submittals were consolidated into one document.

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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.

The design of this removal action was completed in April. A construction contractor was selected on May 29, 1992. Interim controls, to provide wind and surface water run-off control at the Active Flyash Pile, are scheduled for completion by June 30, 1992.

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
Phase I - Complete interim surface stabilization	Open, on schedule.	June 30, 1992
Phase II - Complete Active Fly Ash Pile Controls.	Open, on schedule.	October 28, 1993

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 was backfilled and capped, using a clay cover.

Planned activities for June include the receipt of sample results from the removal action. The results will be incorporated into the Removal Action Final Report, to be issued on July 7, 1992.

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 properly disposition the removed materials off site.

KEY MILESTONES	STATUS	DUE DATE
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. Plants 5, 6, and the Pilot Plant are in rough draft form.

Inventorying of expense equipment items continued; 2,303 expense items are currently in the data base; 669 have been field verified, 404 are on a "shopping list" to ascertain on-site use, 27 have been transferred to Maintenance, and 55 have been placed on AC-563 Forms to be excessed.

The capital equipment inventory continued. Of an estimated 1,343 total number of items, 984 have been put on AC-563 Forms to be excessed, and 359 have been identified as "In Use/Future Use" items. The capital equipment disposition task is 80 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. The task to isolate and remove the equipment is approximately 75% completed.

The effort 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 FEMP to the Defense Consolidation Facility in Snelling, South Carolina, is on schedule. The Scope of Work and Health and Safety Work Plan are being finalized and other preliminary planning is being completed. This seven-month effort will result in an inventory reduction of ~2,838 metric tons uranium, (~6,300,000 net pounds of material).

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RA No. 12, Safe Shutdown (continued)

A General Information Meeting on normal and enriched uranium was held May 15 to give all interested parties a chance to view and discuss the material offered in the *Commerce Business Daily* on March 24, 1992. Seventeen representatives from nine companies attended. DOE-FN and DOE-HQ were also represented. The meeting included an overview of the materials process flow, explanation of available analyses, packaging and shipping concerns, and discussion of the recoverable residues. A plant tour gave the group an opportunity to view representative materials and packaging configurations. The deadline for expressions of interest is June 1.

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 revised cost estimate for the WEMCO/RUST portions of the project was given to Aerojet. The next action on this project will be for Aerojet to finalize their contract with the Department of the Army for this transfer.

Fourteen shipments have been made, as scheduled, against Materials Disposition Order D-777, transfer of UF₄ to the Department of the Army. Total shipped as of May 31, 1992, is 173 metric tons uranium (MTU); balance remaining to be shipped: 167 MTU.

Preparation of the Safety Analysis Report (SAR) by Parsons is continuing.

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 June include scheduling the first meeting of the task team to initiate the Risk Assessment Report, continuing the preliminary assessments for each major process area, continuing the capital equipment disposition effort, continuing UF₄ shipments to the Department of the Army, and initiating activities to transfer 4A metal from the site. Also, the annual update for the RA No. 12 compendium of procedures will be submitted to the U.S. EPA on June 30, 1992.

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.

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RA No. 13, Plant 1 Ore Silos (continued)

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 and U.S. EPA on May 18, 1992. June activities will include revisions to the Work Plan and issuance of the prepared design for subcontractor bidding.

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
Complete design.	Completed May 6, 1992.	June 18, 1992
Initiate field activities.	Open, on schedule.	October 18, 1992
Complete Removal Action	Open, on schedule.	December 18, 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.

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. Conditional approval of the Work Plan was received from the U.S. EPA on May 18, 1992. June activities will include revisions to the Work Plan and preparation of the design for subcontractor bidding.

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

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
Phase I - Completion of walkover survey and excavation of hot spots.	Open, on schedule.	August 18, 1992
Phase II - Complete post excavation and submit interim reports.	Open, on schedule.	April 18, 1993
Phase III - Revise RSE and submit final report.	Open, on schedule.	July 18, 1993

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.

Comments on the Work Plan were received from the U.S. EPA on March 4, 1992. The revised Work Plan was resubmitted to the U.S. EPA on April 3, 1992. Conditional approval of the Work Plan was received from the U.S. EPA on May 18, 1992. June activities will include revisions to the Work Plan and the subcontract award of the ferrous metal disposition activity.

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Period Ending May 31, 1992

RA No. 15, Scrap Metal Piles (continued)

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
Phase I - Award of contract (Assumes award by 6/30/92)	Open, on schedule.	June 30, 1992
Phase I - Submit Subcontractor's Removal Action Project Plan	Open, on schedule.	September 30, 1992
Phase I - Complete	Open, on schedule.	March 30, 1994
Phase IIA - Initiate Containerization	Open, on schedule.	March 30, 1994

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 Storm Water Retention Basin.

Comments from the Ohio EPA and U.S. EPA were received on April 7, 1992, and April 21, 1992, respectively. Comments were addressed, and a Revised Work Plan was issued to the U.S. EPA and Ohio EPA on May 21, 1992.

The 100% designs were reviewed on May 29, 1992.

Work in June will concentrate on completion of CFC package.

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.

May activities included continued preparation for the implementation of the Removal Action. A joint U.S. EPA/Ohio EPA/DOE meeting was held on May 26, 1992 to resolve comments on the Removal Action Work Plan. June activities will include revisions to the Work Plan pending receipt of EPA comments and initiation of containment structure design.

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	Received comments May 26, 1992	April 24, 1992
Submit Revised Work Plan to the U.S. EPA	Open, on schedule	June 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. DOE selected the dredge as the method of transferring the material within Pit 5.

Activities in May included producing an Alternatives Evaluation to DOE and initiating design activities.

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Period Ending May 31, 1992

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

Planned activities for June include resolving Ohio EPA and U.S. EPA comments on the Removal Action Work Plan and continuing design work.

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.

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

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 May included completing the Eimco Filter Operability Test, completion of 90% of the PTA and Health and Safety Plan.

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

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

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

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RA No. 21, Expedited Silo 3 (continued)

Work in June will center on preparation and submittal of the Material Evaluation Form and disposition of the equipment removed from Silo 3. Determining the applicability of the metal oxide material as hazardous waste by definition of the Resource Conservation and Recovery Act will also be initiated in June.

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 May included the development of the complete scope and Work Plan for the Removal Action.

Planned activities for June will include preparation of the Alternatives Evaluation and initiation of work to write the Work Plan.

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 material removed. 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.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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Period Ending May 31, 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.

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. May activities included initiation of Work Plan preparation. June activities will involve continuation of Work Plan activities.

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.

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RA No. 25, Nitric Acid Tank Car and Area (continued)

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

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. Abatement within the Asbestos Program include in-situ repairs, encasement, and encapsulation as well as removals.

May activities included submittal of the Work Procedures document. Activities in June will involve continuing field activities in asbestos material identification and abatement.

KEY MILESTONES	STATUS	DUE DATE
Submit Work Procedures to the U.S. EPA	Completed May 19, 1992	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. Initial scoping of the work began in April 1992. Data gathering activities began in May. Document preparation will continue in June.

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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Period Ending May 31, 1992

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.

As a result of a discussion with U.S. EPA on May 27, 1992 concerning the issue of sampling Pits 4, 5 and the Clearwell, it was determined that Pit 4 will need to be sampled in addition to Pits 1, 2 and 3. Pit 5 and the Clearwell will not be sampled at this time.

Issues:

On May 27, 1992 a conference call was held with the U.S. EPA to determine if radon flux measurements should be taken for Pit 4, 5 and the Clearwell. At the request of U.S. EPA, radon sampling of the Pit 4 vents will be performed along with a few representative samples from the Pit 4 cap. Pit 5 will not have to be sampled as long as the removal action to control exposed material remains on schedule and the Clearwell will not have to be sampled at all.

Corrective Actions:

Install Pit 4 radon flux measurement devices.

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 is complete. These samples have been shipped to the treatability laboratory where stabilization testing is ongoing.

Issues/Corrective Actions:

None to report.

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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, 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.

The stabilization testing will consist of two phases, the first phase being reagent range-finding experiments based on composite samples and the second phase consisting of testing on strata samples. Within each phase are two stages permitting additional reagent testing as necessary. An optional phase to evaluate waste form durability, radon emanation, and radon leaching is also provided.

Status:

Stage II molds for Pits 1, 2, 3, 4, and 5 have been made and are curing. Stage II will not be performed on Pit 6 since the Stage I testing provided adequate results. Molds are being prepared for the Clearwell and Burn Pit.

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.

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)

All preliminary phase Stage I vitrification melts have been completed using additives to the waste. Additives tested include waste pit area soil, site flyash and sodium silicate. The Nuclear Waste Glass Project Consistency Tests (PCT) on leachate were completed on May 29, 1992 and the results are being formalized at this time. The MTCLP tests began on May 28, 1992.

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:

A schedule recovery plan has been implemented to maintain schedule milestones supporting preparation of the 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.

The first activities scheduled for the RI are field data collection and 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.

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1.3 Remedial Investigation (continued)

Status:

The revision of the waste pit cross sections was initiated on December 2, 1991. 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. The analysis of waste and area contamination has been initiated but is being delayed by data acquisition problems.

Issues:

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

As a result of a recent inspection of seven Operable Unit 1 monitoring wells, it was observed that staining and minor water leakage is occurring. The wells were installed in 1985 by a previous contractor. As a result of the potential leakage the wells will be evaluated further to determine if they should be removed from service.

Corrective Actions:

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 for RI production.

A CCB package is being constructed requesting funding for the removal of all defective wells from service.

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

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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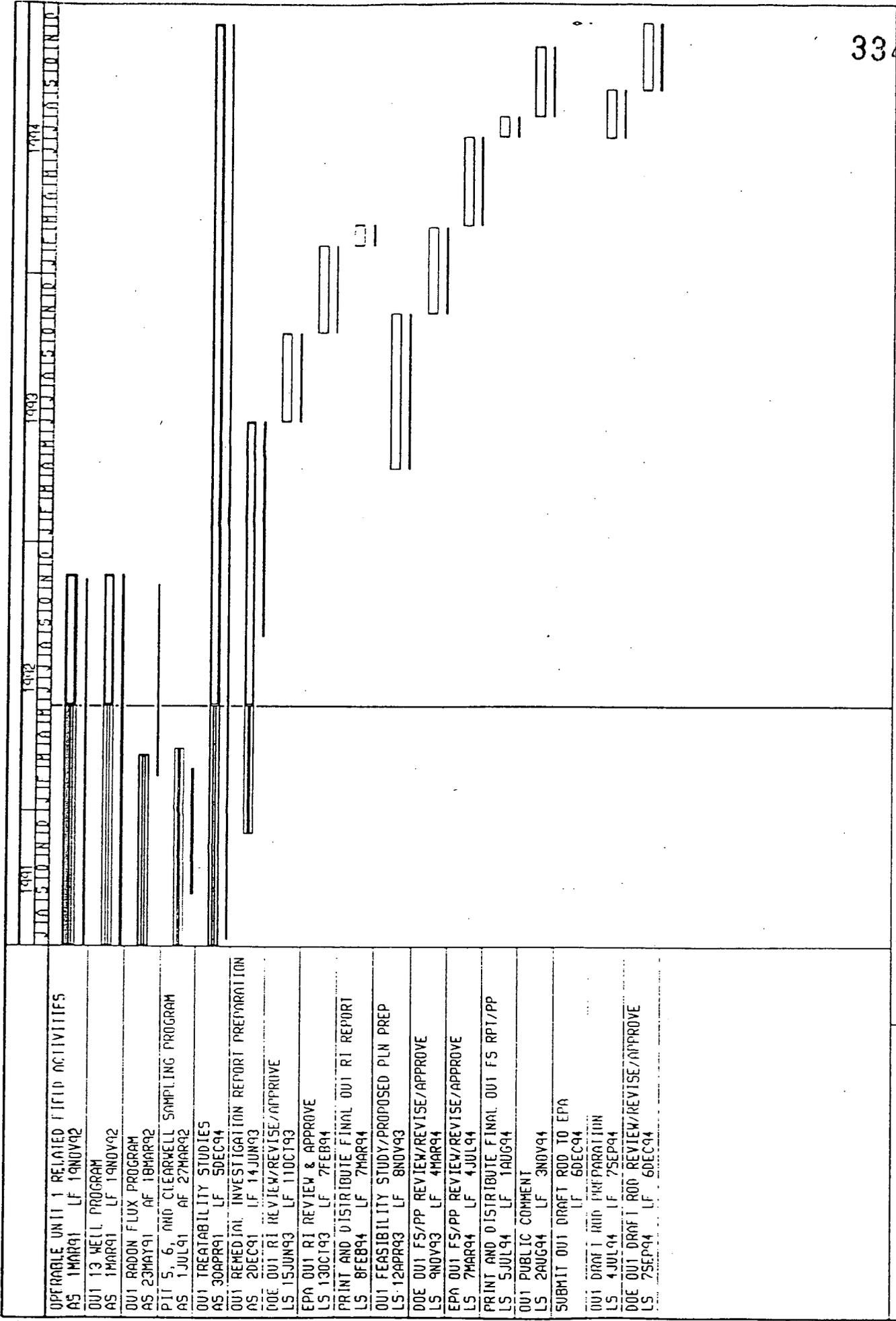
Period Ending May 31, 1992

1.4 Planned Activities for June 1992

Complete data validation and 90 percent 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.



Activity Bar/Date Date Critical Activity Progress Bar Legend Dates in of 10/1/94		Project Start : 10C190 Project Finish: 10AUG94	
R1/F5 PROGRAM CURRENT FERNALD ENVIRONMENTAL MGMT. PROJECT EEMP R1/F5 UNIT CONSENT AGMT (IATF)			
Sheet 1 of 1		Date: _____ Prepared by: ASI/II Corp Checked: []	
3346		Date Date: 24MAY92 Plot Date: 2JUN92	

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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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 U.S. EPA 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 were received and validated during March 1992. Preparation of the Treatability Study Report was initiated in March, completed in early May, and submitted for WEMCO/DOE-FN review on May 11, 1992. Comments are expected back by June 10, 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:

The draft RI Report was completed and submitted for site and DOE-HQ review on May 18, 1992.

Issues:

A schedule recovery plan has been implemented to minimize the impact from data validation delays. Consent Agreement delivery dates are not impacted.

Corrective Action:

The schedule recovery plan for the RI Report consists of the following major points:

- Informal preliminary review of part of the RI Report by site and EM-424/FN (April 15 - May 11).
- WEMCO/DOE-FN/DOE-HQ formal review from May 18 to June 9 (16 working days instead of the normal 21 days).

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Period Ending May 31, 1992

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 10/14/92 F	12/18/92 C 12/14/92 F	01/17/93 C 01/04/93 F

C = Consent Agreement Date

F = Forecast Complete

A = Actual

2.4 Feasibility Study

The purpose of the FS 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. Fate and Transport model development and data analysis in support of the FS risk assessment was initiated in May.

Issues/Corrective Actions:

None to report.

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

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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PERIOD ENDING MAY 31, 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 May 31, 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 May 1992.

Summary - May 1992

The total quantity of uranium discharged from the FEMP to the Great Miami River via Manhole 175 (Outfall 11000004001) was 35.16 kilograms. The average uranium concentration for the previous 12 months was 0.65 mg/l. This is 73.0 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 May 1992. Based on 5.15 inches of rainfall in May 1992, the total quantity of uranium discharged to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 23.18 kilograms.

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

Period Ending May 31, 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
001 Total Discharge
Manhole 175 (Effluent to the Great Miami River)

Month: May 1992

<u>Day</u>	<u>Flow (MGD)</u>	<u>Total Alpha (pCi/l)</u>	<u>Total Beta (pCi/l)</u>	<u>Total U (mg/l)</u>	<u>Total U (kgs)</u>	<u>Calculated Total U-238 (pCi/l) (1)</u>
1	0.417	527	266	0.78	1.23	264
2	0.345	378	221	0.82	1.07	277
3	0.284	486	207	0.88	0.95	297
4	0.323	446	194	0.70	0.86	236
5	0.354	378	189	0.52	0.70	176
6	0.361	414	153	0.50	0.68	169
7	0.336	360	176	0.58	0.74	196
8	0.366	653	459	1.06	1.47	358
9	0.325	383	167	0.60	0.74	203
10	0.200	586	216	1.14	0.86	385
11	0.351	351	153	0.64	0.85	216
12	0.384	320	135	0.62	0.90	209
13	0.501	144	81	0.42	0.80	142
14	0.837	257	108	0.56	1.77	189
15	0.734	302	104	0.42	1.17	142
16	0.855	270	86	0.50	1.62	169
17	0.807	297	63	0.40	1.22	135
18	0.419	153	99	0.34	0.54	115
19	1.125	212	54	0.30	1.28	101
20	0.602	189	81	0.32	0.73	108
21	0.369	387	131	0.64	0.89	216
22	0.872	297	72	0.64	2.11	216
23	0.372	441	117	0.74	1.04	250
24	0.492	464	144	0.82	1.53	277
25	0.467	441	99	0.74	1.31	250
26	0.338	432	0	0.62	0.79	209
27	0.308	324	95	0.44	0.51	149
28	0.295	0	0	0.60	0.67	203
29	1.104	0	0	0.34	1.42	115
30	1.013	0	0	0.74	2.84	250
31	<u>0.781</u>	0	0	0.64	<u>1.89</u>	216
TOTAL	16.337				35.16	

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

Period Ending May 31, 1992

Wastewater Flows and Radionuclide Concentrations

Facility: Fernald Environmental Management Project

Location: 001 Total Discharge

Month: May 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.	0.527	270	101	0.57	1.13	192
Max.	1.125	653	459	1.14	2.84	385
Min.	0.200	0	0	0.30	0.51	101

The average uranium concentration for the previous twelve months was 0.65 mg/l. This is 73.0 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 May 31, 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: May 1992

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

Based on 5.15 inches of rainfall for the month, the uranium discharge to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 23.18 kgs.

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

PERIOD ENDING MAY 31, 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 May 31, 1992

INTRODUCTION

Enclosure B describes actions undertaken at the FEMP during the period May 1 through May 31, 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 May 31, 1992

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

3. Reports and Record Keeping

Section B

The RI/FS Monthly Technical Progress Report for April 1992 was transmitted to the U.S. EPA on May 19, 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 Quarterly Particulate Emissions Report will now be incorporated into 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 April 30, 1992, was transmitted to the U.S. EPA on May 19, 1992 as Enclosure B of the Consolidated Consent Agreement/Federal Facility Compliance Agreement (CA/FFCA) Monthly Progress Report.

TABLE 1

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

MAY 31, 1992

<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 April 1992 was transmitted to the U.S. EPA on May 19, 1992 (DOE-1724-92).
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).

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

MAY 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 Quarterly Particulate Emissions Report will now be incorporated into 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**

MAY 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	April's FFCA Monthly Progress Report was transmitted to the U.S. EPA on May 19, 1992 (DOE-1724-92).

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

Period Ending May 31, 1992

2.5 Planned Activities for June 1992

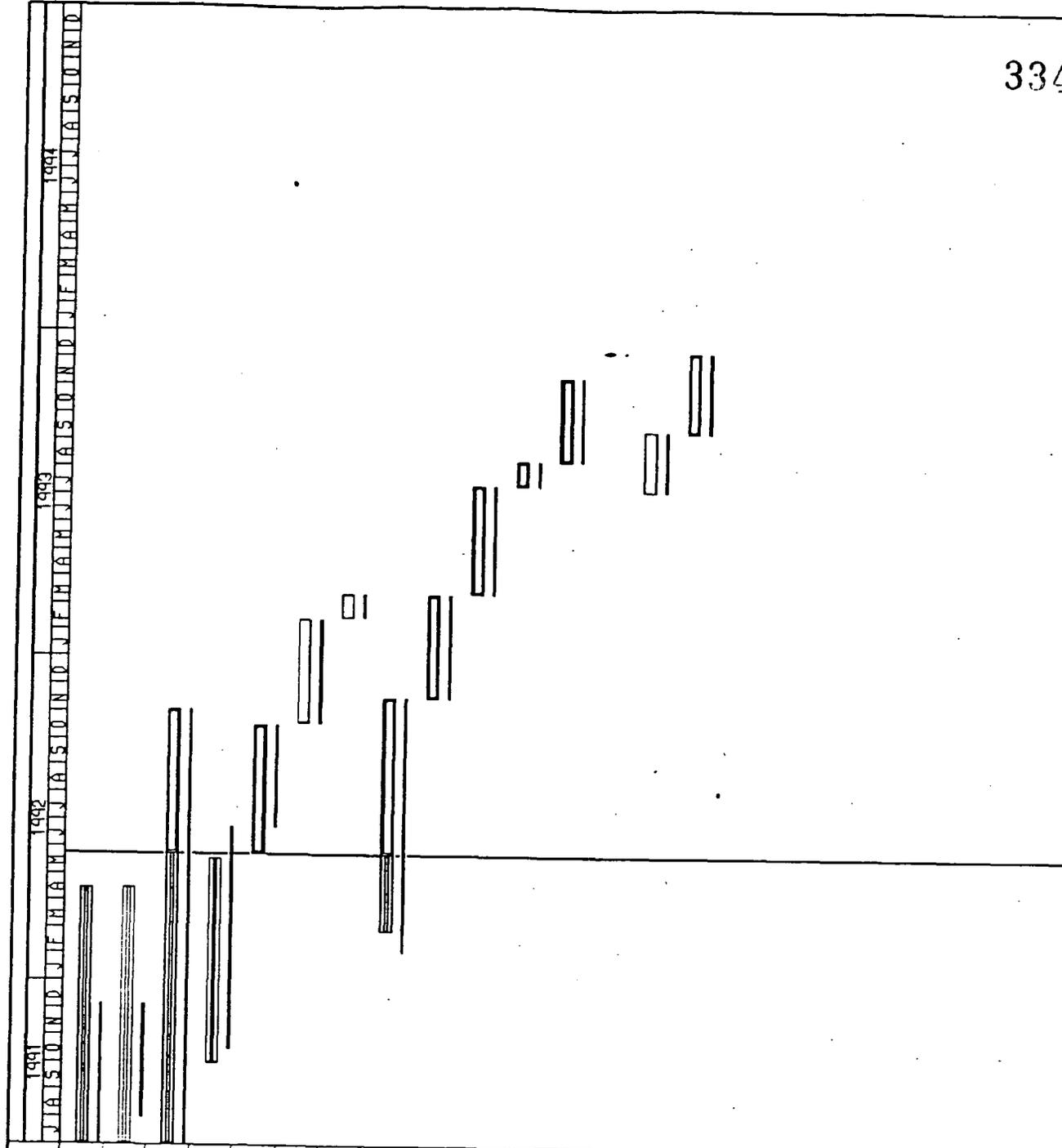
Complete WEMCO/DOE-FN review of the Treatability Study Report. Begin incorporation of comments into revised report.

Complete WEMCO/DOE-FN and DOE-HQ review of the RI Report.

Begin incorporation of WEMCO/DOE-FN and DOE-HQ comments into the RI Report.

Complete alternative revision based on treatability results and characterization data review.

Begin alternative cost estimates, NEPA analysis, and FS risk assessment for the FS Report.



OU2 1q WELL PROGRAM AS 1MAR91 AF 15APR92
OU2 ADDITIONAL HSL SAMPLING PROGRAM AS 1JUL91 AF 15APR92
OU2 TREATABILITY STUDIES AS 1APR91 LF 2NOV92
OU2 REMEDIAL INVESTIGATION REPORT PREPARATION AS 1OCT91 AF 18MAY92
DOE OU2 R1 REVIEW/REVISE/APPROVE LS 25MAY92 LF 16OCT92
EPA OU2 R1 REVIEW & APPROVE LS 20OCT92 LF 12FEB93
PRINT AND DISTRIBUTE FINAL OU2 R1 REPORT LS 15FEB93 LF 12MAR93
OU2 FEASIBILITY STUDY/PROP PLAN PREP AS 28FEB92 LF 16NOV92
DOE OU2 FS/PP REVIEW/REVISE/APPROVE LS 17NOV92 LF 12MAR93
EPA OU2 FS/PP REVIEW/REVISE/APPROVE LS 15MAR93 LF 12JUL93
PRINT AND DISTRIBUTE FINAL OU2 FS/PP LS 13JUL93 LF 9AUG93
OU2 PUBLIC COMMENT LS 10AUG93 LF 10NOV93
SUBMIT OU2 DRAFT ROD TO EPA LF 10DEC93
OU2 DRAFT ROD PREPARATION LS 8JUL93 LF 13SEP93
DOE OU2 DRAFT ROD REVIEW/REVISE/APPROVE LS 13SEP93 LF 10DEC93

Activity Bar/Late Dates
Critical Activity
Progress Bar
Target Dates as of 10C190

Project Start : 10C190
Project Finish: 10AUG98

RI/FS PROGRAM CURRENT
FERNALD ENVIRONMENTAL MGMT. PROJECT
FEMP RI/FS OU2 CONSENT AGMT (LATE)

Sheet 1 of 1

Prepared by ASI/II Corp.
Date: _____
Checked: _____
Approved: _____

Data Date: 24MAY92
Plot Date: 2JUN92

Prinavera Systems, Inc. 1991-1991

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

Period Ending May 31, 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 May included incorporation of HQ-DOE comments and preparation of the revised draft RI/FS Work Plan Addendum. Other tasks included supporting activities for preparation of the basic work plan, completion of the draft Sampling and Analysis Plan (SAP), and identification of potentially applicable decontamination and dismantlement technologies.

3.1.1 Development of the Draft Operable Unit 3 Work Plan Addendum

The results of the initial identification of potentially applicable decontamination/dismantlement technologies has been included in the Work Plan. Research into these technologies continued throughout the month. DOE-HQ comment incorporation and Work Plan revision also continued through the month of May. A comment resolution meeting was held at the FEMP on May 20, 1992 and most issues were resolved at that time. Required changes were incorporated and the Work Plan was resubmitted to DOE-HQ on May 22, 1992. Approval was received and the draft Work Plan Addendum was submitted early to the U.S. EPA and the Ohio EPA on May 29, 1992.

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 May 31, 1992

3.3 Planned Activities for June 1992

Continue preparation for development of field implementation procedures.

Begin development of required Operable Unit 3 field instrument survey, sample collection, and laboratory analytical procedures.

Continue research on potentially applicable decontamination and dismantlement technology types/process options.

1991 1992 1993 1994 1995 1996 1997
 JASON OF FERNALD ENVIRONMENTAL MANAGEMENT CORPORATION

3346

SCUPING OF OPER UNIT 3
 AS 1JUL91 LF 28AUG92

OPERABLE UNIT 3 FIELD RELATED ACTIVITIES
 LS 6JUL92 LF 5DEC94

ADMINISTRATION BUILDING
 LS 31AUG92 LF 28JUN93

WAREHOUSE/STORAGE BUILDINGS
 LS 31AUG92 LF 2MAR94

CHEMICAL PROCESS PLANT
 LS 31AUG92 LF 27DEC93

METAL PROCESS PLANT
 LS 31AUG92 LF 27APR93

SUPPORT FACILITIES
 LS 7SEP93 LF 5DEC94

ABV. GRND TANKS/UTIL /EQUIP
 LS 23DEC92 LF 10JAN94

PARKING LOTS/RAILROAD TRACKS/ROADS
 LS 12JAN94 LF 6JUL94

WASTE PROCESSING FACILITIES
 LS 12NOV93 LF 5DEC94

INVENTORY SAMPLING
 LS 3MAR94 LF 5DEC94

BULK CONTAMINANTS
 LS 12FEB93 LF 17MAR94

PONDS/BASINS
 LS 18JAN93 LF 17JUN93

SUBSURFACE TANKS/UTIL /EQUIP
 LS 24AUG93 LF 2NOV94

SAFE SHUTDOWN BY WEMCO
 AS 1JUL91 LF 10AUG98

OU3 BL RISK ASSESSMENT
 LS 29AUG93 LF 24MAY95

OU3 TREATABILITY STUDIES
 LS 15JUN92 LF 20JUN95

OU3 REMEDIAL INVESTIGATION REPORT PREP
 LS 28APR93 LF 15NOV95

DOE OU3 RI REVIEW/REVISE/APPROVE
 LS 16NOV95 LF 13MAR96

EPA OU3 RI REVIEW/REVISE/APPROVE
 LS 14MAR96 LF 9JUL96

PRINT AND DISTRIBUTE FINAL OU3 RI REPORT
 LS 10JUL96 LF 6AUG96

Activity Bar/Date Dates
 Critical Activity
 Progress Bar
 Target Dates as of 10/1/90

RI/FS PROGRAM CURRENT
 FERNALD ENVIRONMENTAL MGMT. PROJECT
 FEMP RI/FS OU3 CONSENT AGMT (LATE)

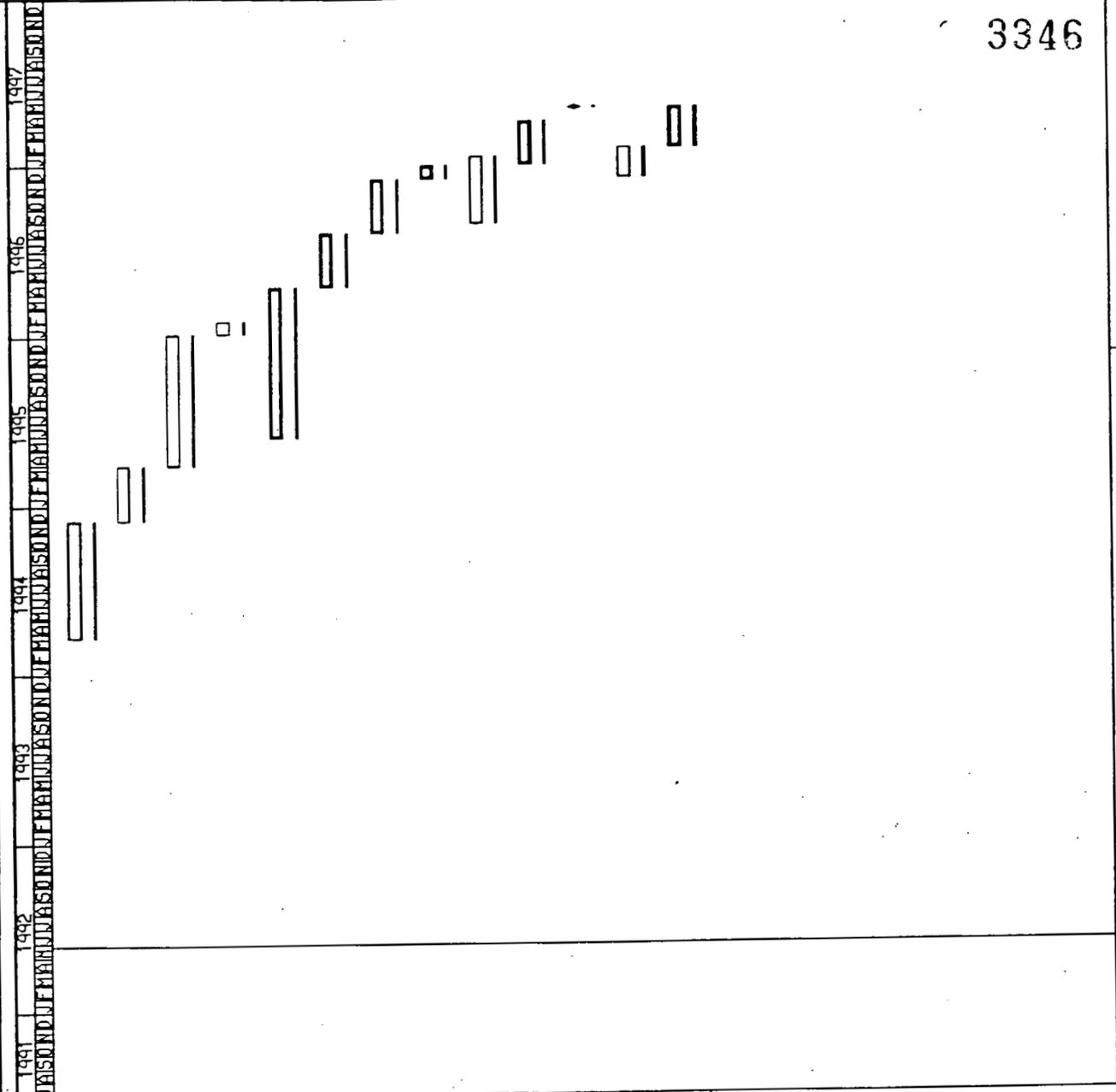
Sheet 1 of 2

Date: _____
 Prepared by: _____
 Checked: _____
 Approved: _____

Data Date: 24MAY92
 Plot Date: 2JUN92

Project Start : 10/1/90
 Project Finish: 10/6/98

Prinavera Systems, Inc. 1984-1991



Activity Bar/Late Dates
 Critical Activity
 Progress Bar
 Target Dates as of 10C190

Primavera Systems, Inc. 1994-1991

Project Start: 10C190
 Project Finish: 10AUG98

RI/FS PROGRAM CURRENT
 FERNALD ENVIRONMENTAL MGMT. PROJECT
 FEMP RI/FS OU3 CONSENT AGMT (LATE)

Sheet 2 of 2

Prepared by ASI/IT Corp.

Date	Revision	Checked	Approved

Data Date: 24MAY92
 Plot Date: 2JUN92

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

Period Ending May 31, 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 by ASI/IT and entered into the RI/FS database. The independent validation of calibration data by Ebasco will be complete on July 16, 1992.

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 by ASI/IT and database entry are complete. The independent validation of the radiological calibration data by Ebasco will be completed by July 16, 1992.

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

Period Ending May 31, 1992

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:

The contract laboratory has completed the analysis of the samples that were retrieved from archive storage.

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. ASI/IT data validation is complete. Evaluation of ASI/IT validation results and database entry have been completed. The Ebasco 100% independent validation of the calibration data is scheduled for completion on July 16, 1992.

Issues/Corrective Actions:

None to report.

4.2 Treatability Studies

Scope:

The purpose of a treatability study work plan 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
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending May 31, 1992

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 testing supporting the Treatability Study continued in May.

Silos 1 and 2 - Advanced Phase Stabilization Testing - The advanced phase for stabilization was initiated in May. Twenty-eight molds were set and are curing. Fourteen molds of this 28 will be used for the 5-day static leach testing and 14 molds for stabilized waste TCLP.

Silo 3 - Advanced Phase - Stabilization Testing - The advanced phase for stabilization of Silo 3 material was initiated in May. Six molds were set and are curing. Three of these molds will be used for the 5-day static leach test and three for the stabilized waste TCLP.

Chemical Extraction tests - Precipitation experiments are continuing and stabilization and vitrification testing of leachate will begin in June. Extracted solids from the chemical extraction experiments were sent to ORL for analysis and the data is expected back in 60 days.

The crucibles for Operable Unit 4 have arrived and will be prepared for vitrification testing of the leachate from the chemical extraction tests.

The database for treatability sample tracking is fully operational. Precipitation and extraction data will be incorporated into the database during June.

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

Period Ending May 31, 1992

4.2 Treatability Studies (Continued)

Vitrification Treatability Testing - Fabrication and installation of the benchscale furnace and associated equipment was completed. Also, three 100 gram test melts of the metal oxide material were completed. With additives, a very glassy melt resulted. A modified TCLP analysis of the resultant waste forms is in progress.

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 RAOs.

Status:

Activities continued on the Operable Unit 4 RI during May. Analyses continued on the field data collected during the characterization program. New figures were created depicting the Silos 1 and 2 subsoil slant borings and vertical berm borings. Tables summarizing the slant and vertical boring data and the Silo 1, 2 and 3 content data were initiated. The baseline risk assessment modeling for Silo 3 contents was initiated.

Issues:

Delays in completion of data validation and entry into the database has delayed evaluation of the RI data, as reported in the April monthly report. No impact to the Consent Agreement delivery date for the RI is anticipated.

Corrective Action:

A recovery plan has been initiated to ensure the RI will be completed and delivered per Consent Agreement dates.

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

Period Ending May 31, 1992

4.3 Remedial Investigation Report (continued)

OU4 REMEDIAL INVESTIGATION REPORT

PRIMARY

SCOPE	SUBMIT TO DOE	SUBMIT TO DOE/HQ	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.	12/21/92 C	02/17/93 C	04/19/93 C	06/18/93 C	07/18/93 C
	09/04/92 B	11/03/92 B	01/01/93 B	03/02/93 B	04/01/93 B
	10/15/92 F	12/14/92 F	02/11/93 F	04/13/93 F	05/11/93 F

C = Consent Agreement Date

F = Forecast Complete

A = Actual

4.4 Feasibility Study

Scope:

The purpose of the FS 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 alternatives revision activity was initiated in May. Requires revision of the alternatives as described in the U.S. EPA-approved Initial Screening of Alternatives is proceeding as directed by DOE-FN. The alternatives are being revised to divide the waste media into separate alternatives. For example, alternatives to disposition Silos 1 and 2 contents are being created; alternatives are being revised for Silo 3 contents only; silo structures, berms and subsoils are being grouped in another set of alternatives; and Silo 4 is being dispositioned in separate alternatives.

Issues/Corrective Actions:

None to report.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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Period Ending May 31, 1992

4.5 Planned Activities for June, 1992

Continue revisions to the RI Report. Initiated baseline risk assessment modeling for Silos 1 and 2 contents.

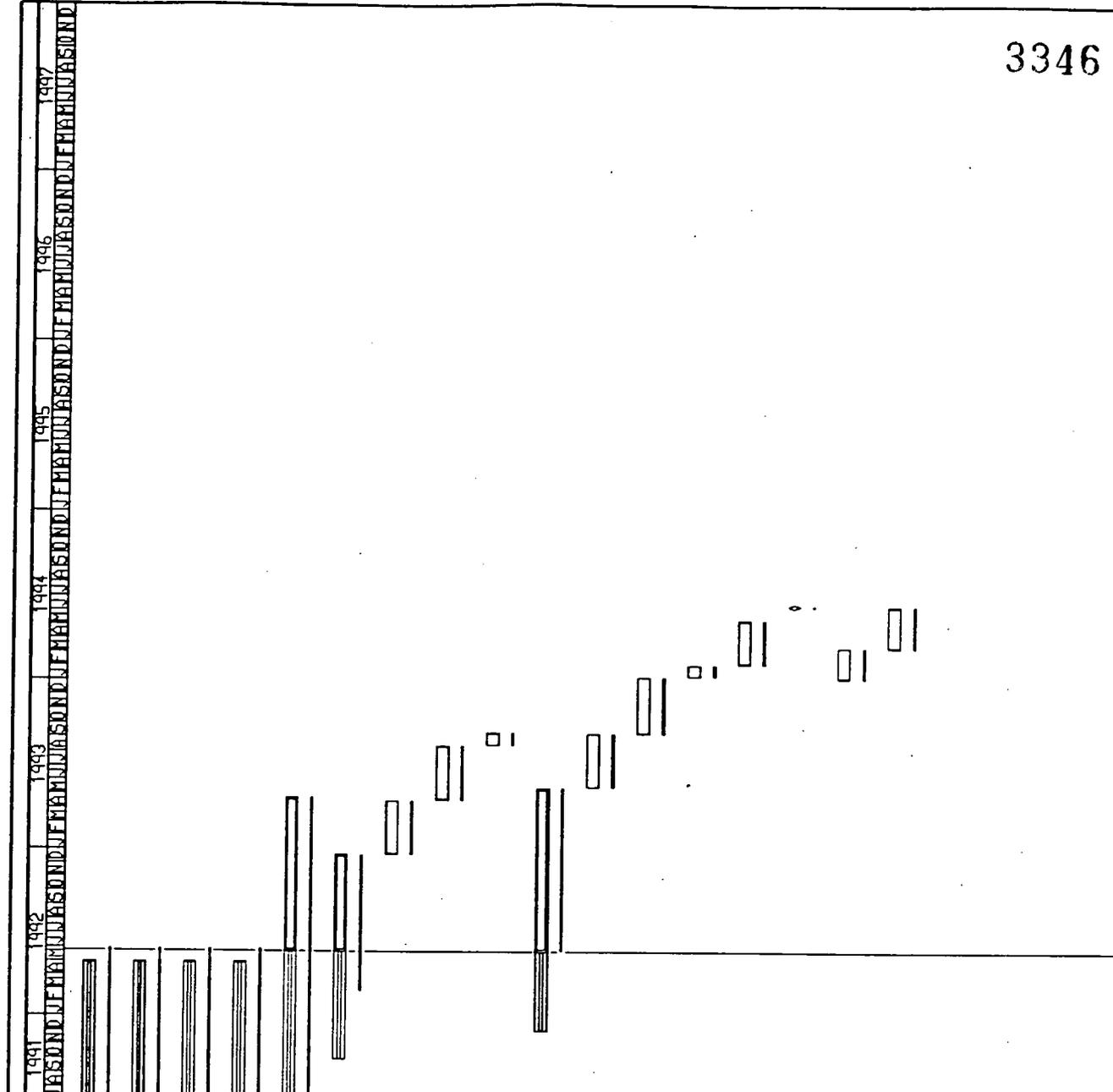
Continue FS alternatives revision.

Cement stabilization treatability testing will continue with the advanced phase molds. UCS and 5-day static testing will begin in June.

Chemical extraction treatability testing will continue. Stabilization and vitrification will begin for wash solutions.

Vitrification on extractant solutions from chemical extraction testing will be initiated.

Vitrification testing of the silo content material will continue for Silos 1, 2, and 3.



Prepared by ASI/IT Corp.	
Date	Checked
Revised	Revised
	Approved

Sheet 1 of 1
 Date Date: 24MAY92
 Plot Date: 2JUN92

RI/FS PROGRAM CURRENT
 FERNALD ENVIRONMENTAL MGMT. PROJECT
 FEMP RI/FS OU4 CONSENT AGMT (LATE)

Activity Bar/Late Dates	Project Start: 10CT90
Critical Activity	Project Finish: 10AUG98
Progress Bar	
Legend Dates: 10/1/90	
Prinavera Systems, Inc. 1981-1991	

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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5.0 Operable Unit 5

Operable Unit 5, as defined in the Amended Consent Agreement, includes 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:

Complete.

Issues/Corrective Actions:

Stream infiltration measurements were not successful. New techniques will be evaluated.

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.

Status:

Complete.

Issues/Corrective Actions:

None to report.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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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:

Complete.

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:

Complete.

Issues/Corrective Actions:

None to report.

5.1.5 Miscellaneous Additional Wells Program

Scope:

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

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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5.1.5 Miscellaneous Additional Wells Program (continued)

Status:

A revised work plan incorporating the final comment resolution was prepared.

Installation of all planned wells under this program is complete. The first round of groundwater sampling has been completed and the second round of groundwater sampling is proceeding. The laboratory results for total dissolved uranium concentrations from the first round of groundwater sampling will be examined to determine if further contingency wells will be 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. 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 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 1.4 $\mu\text{g}/\ell$ in the initial sample and 6.7 $\mu\text{g}/\ell$ in the second 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. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 3.6 $\mu\text{g}/\ell$ in the initial sample.

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 and 0.8 $\mu\text{g}/\ell$ in the second 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 and 0.3 $\mu\text{g}/\ell$ in the second 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 and 1.8 $\mu\text{g}/\ell$ in the second 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 and 22 $\mu\text{g}/\ell$ in the second 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. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 7.0 $\mu\text{g}/\ell$ in the initial sample.
- Well 3678 - Installation complete. Developed and completed first groundwater sampling round. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 0.4 $\mu\text{g}/\ell$ in the initial sample and 0.3 $\mu\text{g}/\ell$ in the second sample.
- Well 3679 - Installation complete. Developed and completed first groundwater sampling round. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 1.0 $\mu\text{g}/\ell$ in the initial sample and 0.2 $\mu\text{g}/\ell$ in the second sample.
- Well 2423 - Installation complete. Developed and completed first groundwater sampling round. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 0.4 $\mu\text{g}/\ell$ in the initial sample.
- Well 3423 - Installation complete. Developed and completed first groundwater sampling round. Analytical results from the on-site laboratory indicate a total dissolved uranium concentration of 0.6 $\mu\text{g}/\ell$ in the initial sample.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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5.1.5 Miscellaneous Additional Wells Program (continued)

- 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 0.7 $\mu\text{g}/\ell$ in the initial sample.

Issues/Corrective Actions:

None to report.

5.1.6 OU5 Work Plan Addenda (Formally Auger and Cable Tool 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. Comments have been received from the Ohio EPA and U.S. EPA and are being reviewed and resolutions assessed.

Field characterization of the K-65 Slurry and Clearwell Line portion of the Addenda has begun.

Issues/Corrective Actions:

None to report.

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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 and 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. The study consists of two stages: remedy screening involving laboratory and bench-scale tests and remedy selection using pilot-scale equipment.

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 on April 7, 1992. Written responses to these comments have been prepared and were submitted to the agencies on May 5, 1992. Ohio EPA approved the responses to comments on May 20, 1992.

Issues/Corrective Actions:

None to report.

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

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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5.3 Initial Screening of Alternatives

Scope:

The Initial Screening of Alternatives Report will document the initial activities of the FS. 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.

Status:

The Initial Screening of Alternatives document is currently being revised for submittal to DOE-HQ on July 15, 1992.

Issues/Corrective Actions:

The comments received from the DOE site office resulted in a decision to restructure the Initial Screening of Alternatives. 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 09/30/92 F	06/15/93 C 11/30/92 F	07/15/93 C 02/19/93 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 June 1992

Receive and respond to comments from the agencies on the Operable Unit 5 Work Plan Addendum (Auger and Cable Sampling).

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

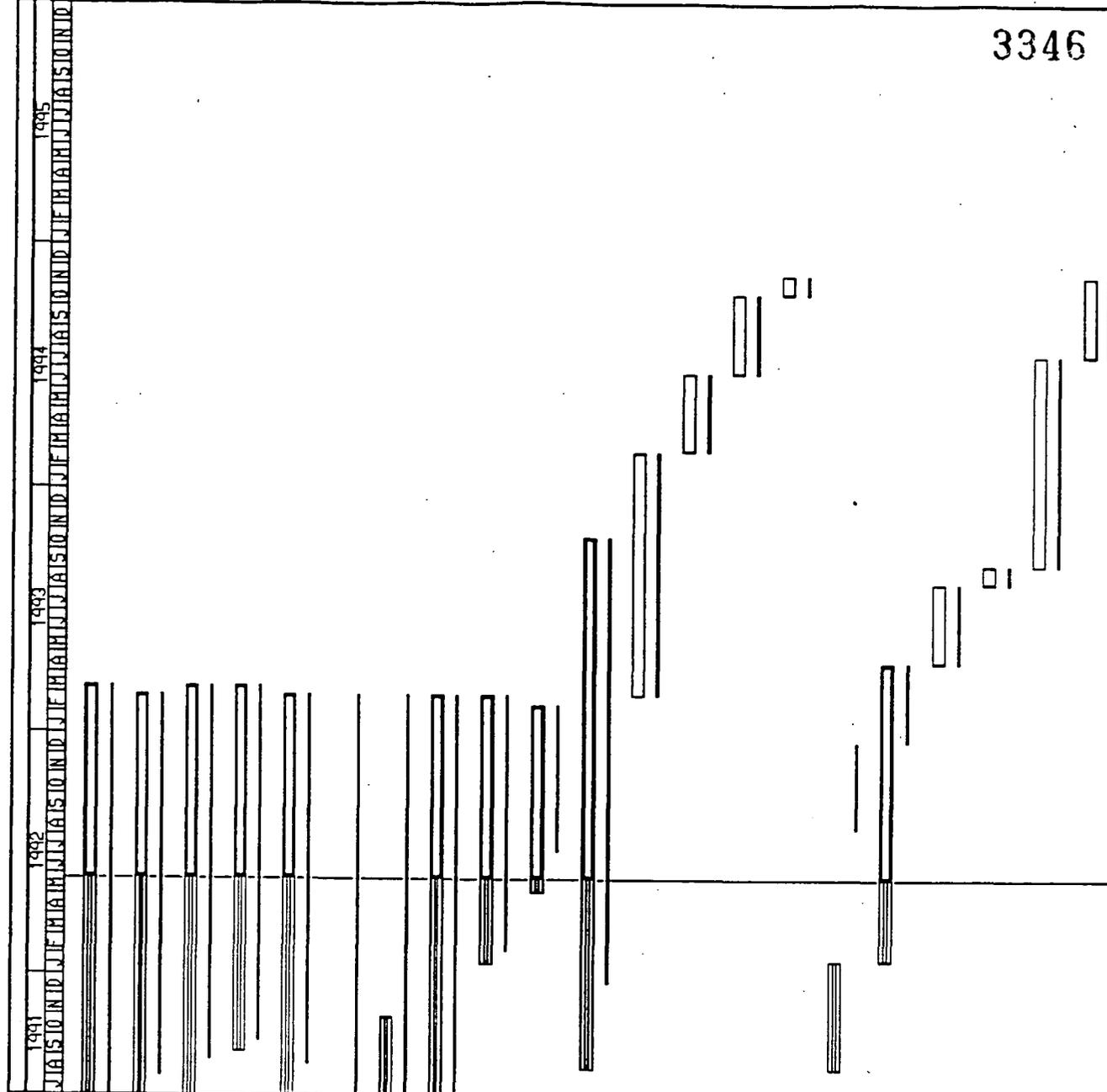
**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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5.4 Planned Activities for June 1992 (continued)

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.

Revise Initial Screening of Alternatives document.



OPERABLE UNIT 5 RELATED FIELD ACTIVITIES AS 10CT90 LF 11MAR93
FACILITIES TESTING AS 29MAR91 LF 25FEB93
OU5 FIELD WORK 31 WELL PROGRAM AS 15MAR91 LF 11MAR93
OU5 FIELD WORK - PADDYS RUN SAMPLING AS 6SEP91 LF 11MAR93
OU5 FIELD WORK - 8 RCRA WELLS AS 29MAR91 LF 25FEB93
OU5 FIELD WORK - 6 WELL PROGRAM AS 13JAN91 AF 15MAY91
OU5 FIELD WORK - WATER LEVEL MEASUREMENTS AS 10CT90 AF 28OCT91
OU5 FIELD WORK - MISC ADDITIONAL WELLS AS 2JAN91 LF 25FEB93
RCRA/CERCLA BACKGROUND SOIL STUDY AS 17JAN92 LF 25FEB93
K-65 SLURRY/C. WELL LINE INVESTIGATION (WP ADD) AS 4MAY92 LF 10FEB93
OU5 TREATABILITY STUDIES AS 12AUG91 LF 20OCT93
OU5 REMEDIAL INVESTIGATION REPORT PREPARATION LS 26FEB93 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
OU5 INITIAL SCREENING OF ALTERNATIVES PREP AS 12AUG91 AF 22JAN92
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
OU5 FEASIBILITY STUDY/PROPOSED PLAN PREP LS 9SEP93 LF 20JUL94
DOE OUS FS/PP REVIEW/REVISE/APPROVE LS 21JUL94 LF 15NOV94

Prepared by ASI/11 Corp.

Sheet 1 of 2

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

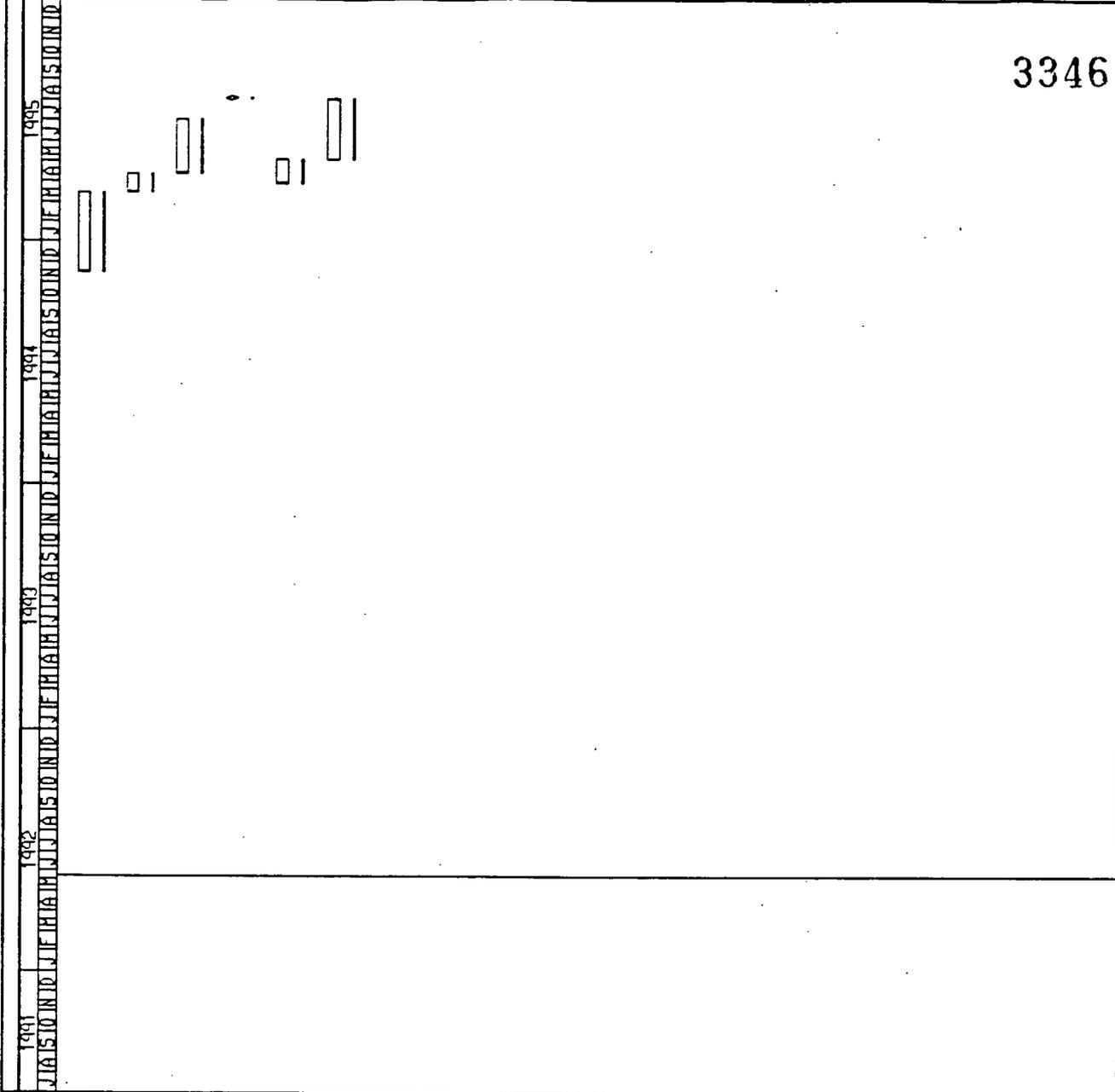
Date: _____ Checked: _____

Data Date: 24MAY92
Plot Date: 2JUNE92

Activity Bar/lets below
Critical Activity
Progress Bar
Target Dates as of 10CT90

Project Start: 10CT90
Project Finish: 10AUG98

Prineavera Systems, Inc. 1004-1001



EPA OUS FS/PP REVIEW/REVISE/APPROVE
 LS 16NOV94 LF 15MAR95
 PRINT AND DIST FINAL OUS FS RPT/PP
 LS 16MAR95 LF 12APR95
 OUS PUBLIC COMMENT
 LS 13APR95 LF 3JUL95
 SUBMIT OUS DRAFT ROD TO EPA
 LF 2AUG95
 OUS DRAFT ROD PREPARATION
 LS 29MAR95 LF 4MAY95
 DOE OUS DRAFT ROD REVIEW/REVISE/APPROVE
 LS 4MAY95 LF 2AUG95

Prepared by RSI/IT Corp.	
Date	Checked

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 Data Date: 24MAY92
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RI/FS PROGRAM CURRENT
 FERNALD ENVIRONMENTAL MGMT. PROJECT
 FEMP RI/FS OUS CONSENT AGMT (LATE)

Project Start : 10CT90
 Project Finish: 10AUG98

Activity Bar/Late Dates
 Critical Activity
 Progress Bar
 Target Dates as of 10CT90
 Primavera Systems, Inc. 1994-1991

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

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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 midstratum 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.

Chemical and radiological analysis of the EWMF soil samples was completed in May with geochemical soil samples submitted for analysis.

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 sections characterizing all pathways and associated risks. The report will be divided into the following sections: Geologic/Hydrogeologic, Geotechnical, Geochemical, Risk Assessment, RI/FS-EIS, and ARARs.

Status:

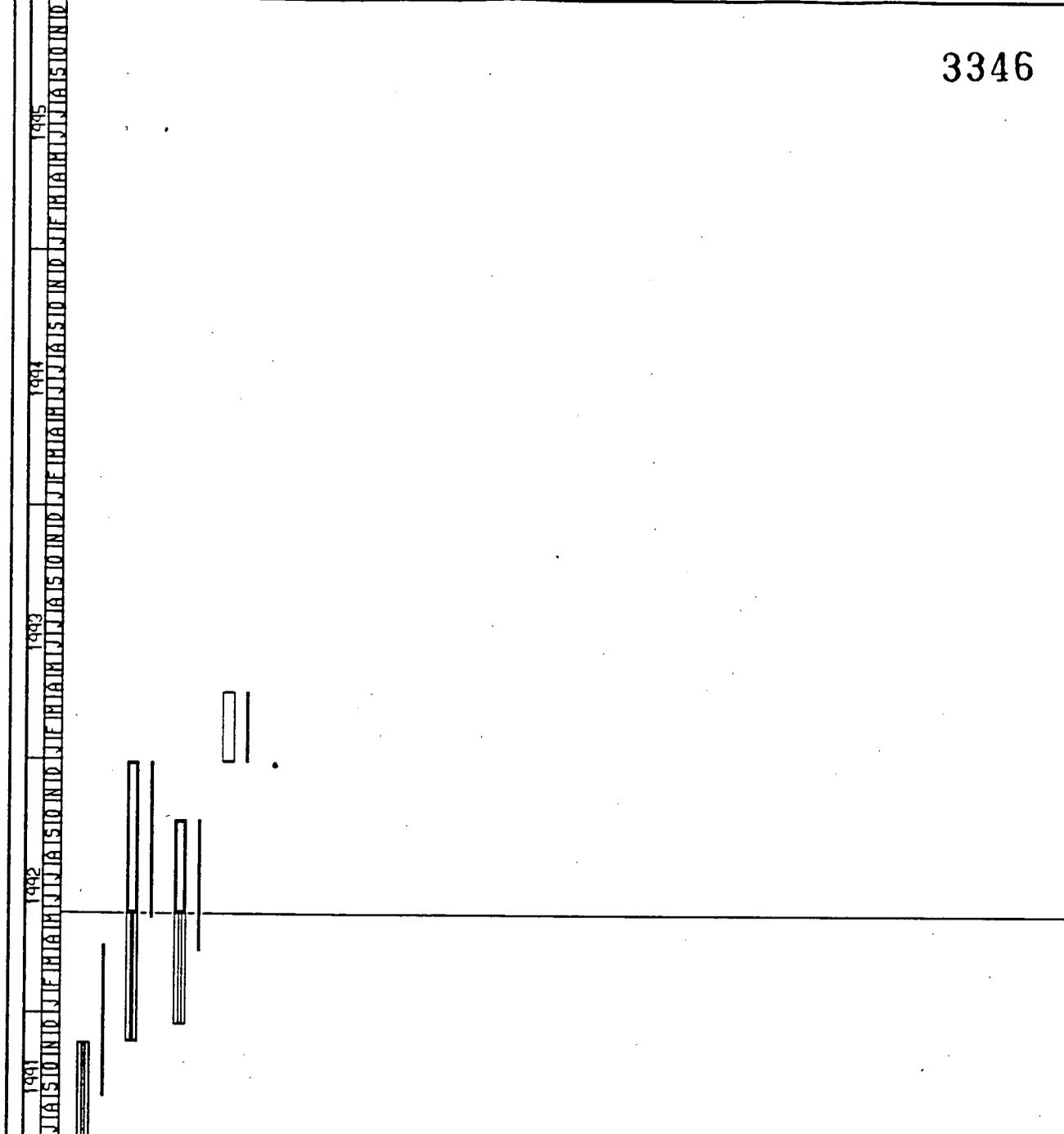
The EWMF ARARs Revision 3 were submitted to the DOE for EPA review on December 3, 1991. Comments were received from the Ohio EPA on January 6, 1992 and the U.S. EPA on January 30, 1992. The ARARs were revised and transmitted to the EPAs on March 18, 1992 as Revision 4. On April 21, 1992, comments were received from Ohio EPA on Revision 4. DOE's responses to the comments will be incorporated into the draft Operable Unit 2 FS/PP/ROD for U.S. EPA submittal.

Issues/Corrective Actions:

None to report.

6.3 Planned Activities for June 1992

Geochemical and geotechnical analysis of the EWMF soil samples will continue.



1991 1992 1993 1994 1995

EWMF SAMPLING AND ANALYSIS PLAN PREP AS 18MAR91 LF 18NOV91

EWMF FIELD INVESTIGATION AS 21NOV91 LF 29DEC92

EWMF MATERIALS SOURCE SURVEY AS 17DEC91 LF 6OCT92

EWMF GENERAL SITING REPORT PREPARATION LS 30DEC92 LF 9APR93

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

Primavera Systems, Inc. 1984-1991

Project Start : 10CT90
 Project Finish: 10AUG98

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

Prepared by RSI/IT Corp.
 Date: _____ Revision: _____ Checked: _____ Approved: _____

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**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 methods 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 approval of the responses to comments on the Risk Assessment Work Plan Addendum from U.S. EPA on May 13, 1992, pending resolution of issues listed in draft comments from U.S. EPA. The six comments on the responses will be resolved and the (Final) Risk Assessment Work Plan Addendum will be printed in June.

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

Issues:

The six comments on the responses to comments have been resolved and preparation of the document to incorporate these additional items is in process.

Corrective Actions:

Ensure that all responses to the additional U.S. EPA comments have agency approval or that alternative approaches to the issues are approved by U.S. EPA.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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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 the leading remedial alternatives for each operable unit for input into the FS cumulative response action risk evaluation.

Status:

Part I, Data Summary, and Part III, Feasibility Study Support (Leading Remedial Alternatives) of the SWCR are in review by DOE-HQ. Part II, the Preliminary Baseline Risk Assessment was delayed four days and will be submitted June 1, 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 June 1992

Submit Part II (Preliminary Baseline Risk Assessment) to DOE-FN and DOE-HQ for review.

Receive comments from DOE-HQ on Parts I and III and begin preparing responses and text revisions.

1991
 JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
 1992

WORK PLAN REVISIONS

AS 17JUN91 AF 29JUL91

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

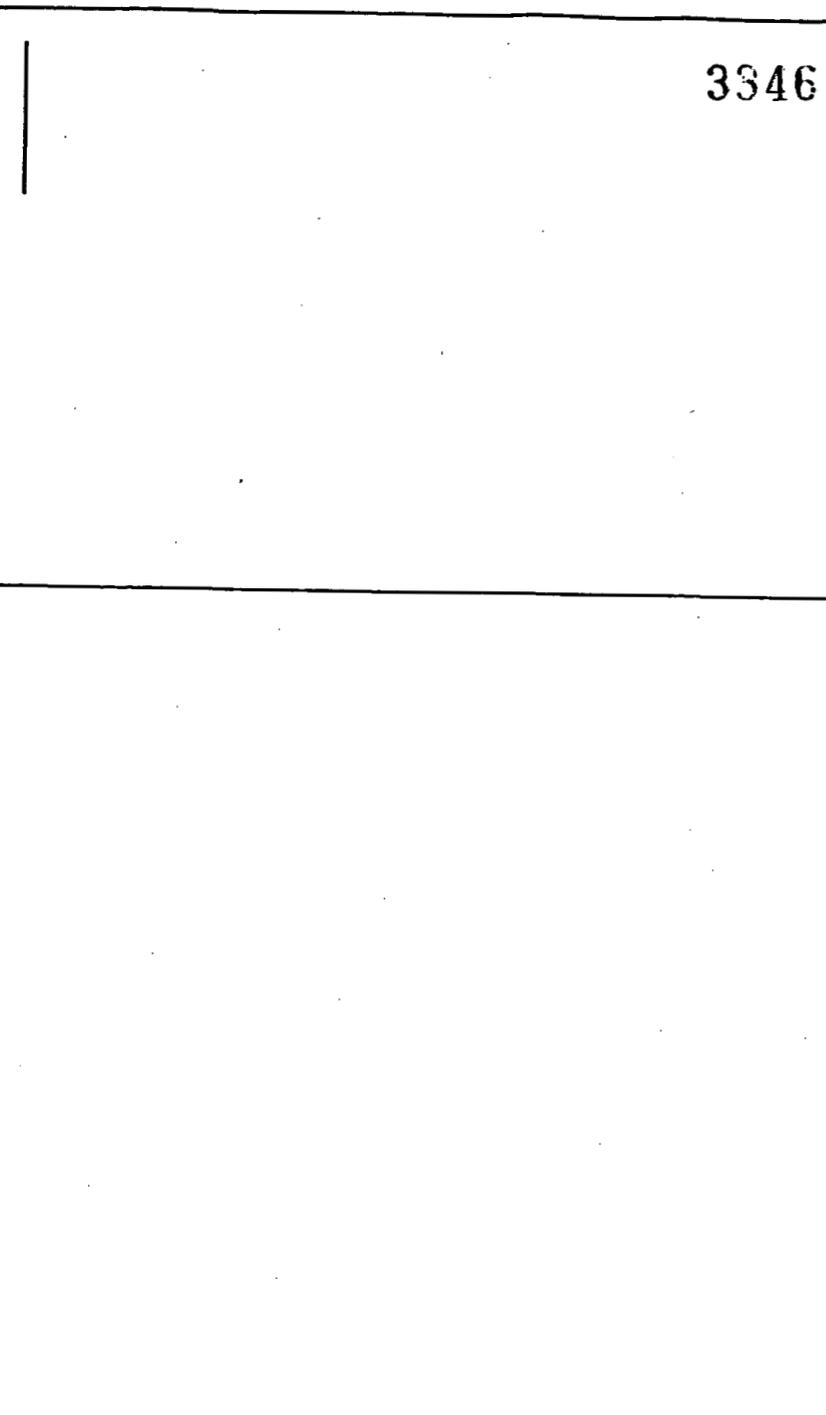
EPA WORK PLAN ADD. REVIEW/REVISE/APPROVE
 AS 11OCT91 EF 10JUN92

SITENWIDE CHARACTERIZATION

AS 26JUL91 EF 1JUN92

DOE REVIEW/REVISE/APPROVE SITE CHAR REPORT
 AS 16APR92 EF 17JUL92

EPA REVIEW/REVISE/APPROVE SITE CHAR REPORT
 ES 20JUL92 EF 15SEP92



Prepared by 651/11 Corp.	
Date	Revision
Checked	Reviewed

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 Date Date: 24MAY92
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RI/FS PROGRAM CURRENT
 FERNALD ENVIRONMENTAL MGMT. PROJECT
 FEMP RI/FS PSC CONSENT AGMT (LATE)

Project Start: 10CT90
 Project Finish: 10AUG98

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

Primavera Systems, Inc. 1991-1991

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Period Ending May 31, 1992

8.0 Community Relations

8.1 Status

The announcement of the public review and comment period on nine removal actions being conducted at the FEMP ran in three local newspapers the last week in May. If no extension is requested, the 45-day comment period will end July 8, 1992. The work plans for the following removal actions are available for review at the Public Environmental Information Center:

- 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

After the comment period ends, a responsiveness summary will be issued that will address each comment received, and an addendum to the Community Relations Plan will be prepared for each removal action.

Three comments from Ohio EPA have been received on the revised Community Relations Plan -- Remedial Investigation/Feasibility Study and Removal Actions -- Volume III of the Work Plan that was submitted to U.S. EPA and Ohio EPA on April 2, 1992.

On May 14, 1992, the Centers for Disease Control held a workshop pertaining to the Fernald Dosimetry Reconstruction Project. This workshop focused on Radiological Assessments Corporation's review of soil samples taken in the vicinity of the FEMP and discussed how these samples will be used in the dose reconstruction effort.

A team from the Agency for Toxic Substances and Disease Registry, an arm of the National Centers for Disease Control, visited the FEMP on May 20 to investigate health hazards at the plant.

8.2 Issues/Corrective Actions:

None to report.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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Period Ending May 31, 1992

8.3 Planned Activities for June 1992

The DOE will hold a Community Workshop about the new Public Participation Plan initiative of the FEMP on Monday, June 8, 1992 from 7:00 - 9:00 p.m. at the Plantation in Harrison, Ohio.

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PERIOD ENDING MAY 31, 1992

ENCLOSURE C

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

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

PERIOD ENDING MAY 31, 1992

ENCLOSURE C

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

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

Period Ending May 31, 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 May 1 through May 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
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Period Ending May 31, 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	Completed. The Bentonite Effectiveness Environmental Monitoring Report was transmitted to the U.S. EPA on 5/22/92.
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. EPA approval was received on 4/24/92.
Part V, 23	Evaluate performance of the removal action and determine whether or not additional actions are needed prior to final remediation.	None specified.	Methodology for estimating radon-222 concentration reduction submitted to U.S. EPA per paragraph 20 of Part V. The first Bentonite Effectiveness Environmental Monitoring Report was issued to the U.S. EPA on 5/22/92.
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 May 1992.

<u>FFA Part, Paragraph(s)</u>	<u>Description of Commitment</u>	<u>FFA Due Date</u>	<u>Status of Commitment</u>
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 May 1992.
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 May 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 May 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.

<u>FFA Part, Paragraph(s)</u>	<u>Description of Commitment</u>	<u>FFA Due Date</u>	<u>Status of Commitment</u>
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 fifth progress report being submitted herewith as an integral part of the CERCLA Consent Agreement Monthly Progress Report.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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Period Ending May 31, 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**

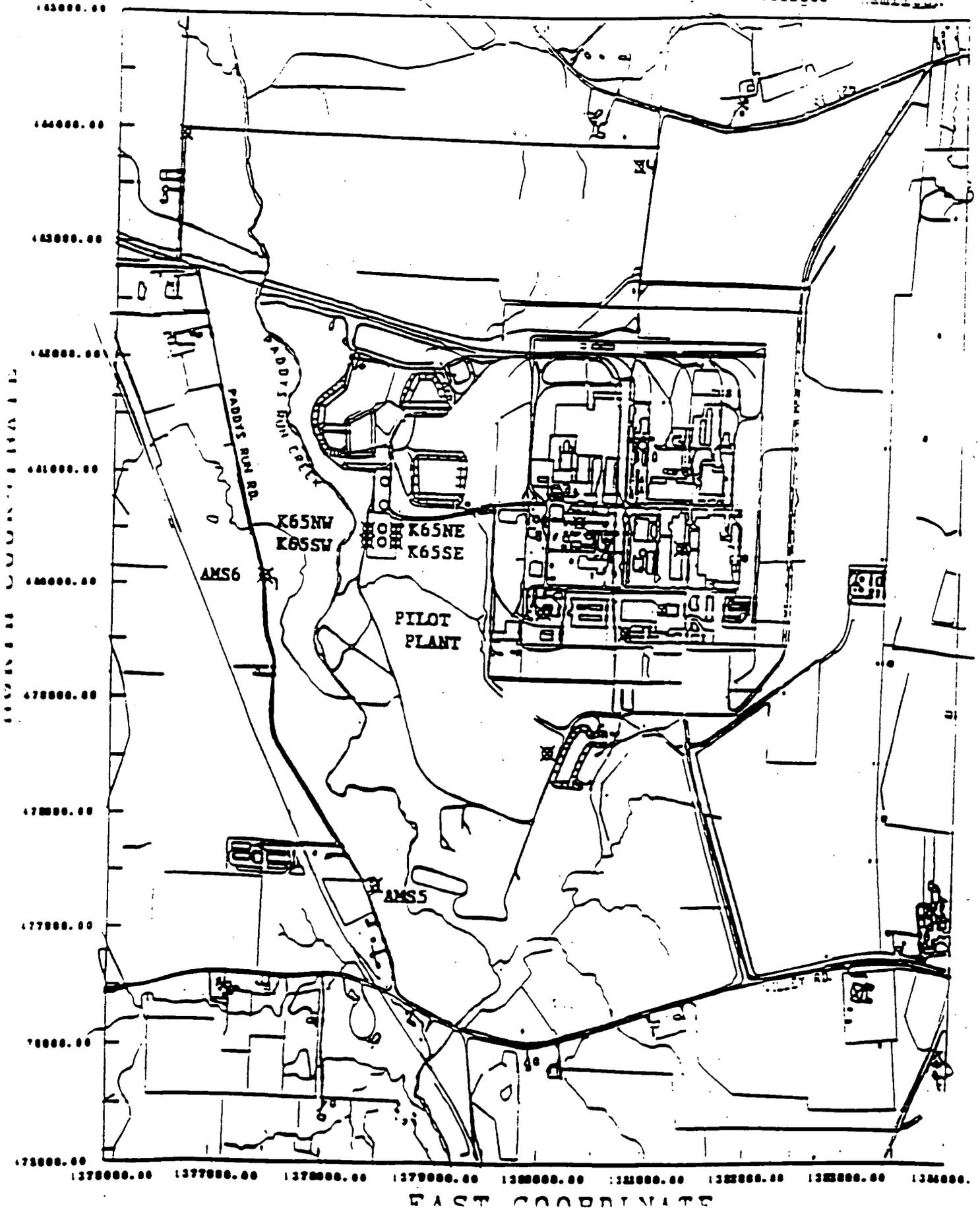
Period Ending May 31, 1992

- 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 offices - 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

K-65 SILO REPORT

LOCATION: Silo # 1

DATE: May 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	66.3	29.398	49.6	100	-0.02	**
2	69.6	29.292	50.7	100	-0.02	569400
3	56.9	29.368	50.9	100	-0.08	**
4	43.5	29.387	50.5	98	-0.10	429300
5	43.5	29.386	49.7	96	-0.10	**
6	47.7	29.626	49.1	97	-0.09	**
7	54.5	29.683	49.1	99	-0.06	496540
8	50.9	29.375	49.5	99	-0.07	**
9	56.4	29.291	49.6	99	-0.06	**
10	61.3	29.563	50.1	100	-0.03	**
11	67.6	29.544	51.1	99	-0.01	440300
12	66.2	29.362	51.9	100	-0.02	365900
13	67.0	29.324	52.5	100	-0.03	294300
14	59.7	29.408	52.7	100	-0.04	648000
15	64.4	29.479	52.8	99	-0.02	**
16	69.2	29.601	53.3	100	-0.01	**
17	68.6	29.593	54.0	100	0.21	**
18	62.8	29.643	54.2	99	0.63	333400
19	67.7	29.659	54.3	100	0.23	483200
20	68.2	29.679	54.8	100	-0.01	199400
21	71.9	29.707	55.1	100	0.00	88000
22	70.2	29.654	55.6	99	-0.01	**
23	68.1	29.497	55.9	100	-0.02	**
24	51.0	29.443	55.7	100	0.58	**
25	49.4	29.422	54.7	99	-0.07	377300
26	52.3	29.376	54.4	100	-0.07	621450
27	52.5	29.432	54.2	99	-0.07	575500
28	56.8	29.510	54.1	99	-0.05	390000
29	50.4	29.424	53.9	98	-0.08	**
30	55.4	29.342	53.6	97	-0.09	**
31	57.4	29.493	53.6	97	-0.06	**

ARITHMETIC

MEAN	59.59	29.483	52.6	99	0.01	203613
MAXIMUM	71.900	29.707	55.900	100.000	0.630	648000
MINIMUM	43.500	29.291	49.100	96.000	-0.100	88000
MEDIAN	57.40	29.479	53.6	99	-0.04	429300

Note: ** - Data currently only scheduled for periodic collection.

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

CONSOLIDATE CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/
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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: May 1992

Day	Ambient Temp Deg. F	Pres In. Hg.	Temperatu Head Spa Deg. F	Inter. Hum. %	Diff. Pres In. HG	Head Space Radon (pCi/l)
1	66.3	29.398	49.6	100	1.41	**
2	69.6	29.292	50.7	100	1.56	93900
3	56.9	29.368	50.9	100	0.98	**
4	43.5	29.387	50.4	100	*	231000
5	43.5	29.386	49.6	100	*	**
6	47.7	29.626	48.9	100	*	**
7	54.5	29.683	49.1	100	*	207430
8	50.9	29.375	49.4	100	*	**
9	56.4	29.291	49.5	100	*	**
10	61.3	29.563	50.0	100	*	**
11	67.6	29.544	51.0	100	*	83700
12	66.2	29.362	51.8	100	*	181900
13	67.0	29.324	52.4	100	*	233500
14	59.7	29.408	52.6	100	*	312400
15	64.4	29.479	52.7	100	*	**
16	69.2	29.601	53.2	99	*	**
17	68.6	29.593	53.9	99	*	**
18	62.8	29.643	54.1	100	*	284800
19	67.7	29.659	54.2	99	1.17	47400
20	68.2	29.679	54.7	99	0.25	321600
21	71.9	29.707	55.1	99	-0.11	300000
22	70.2	29.654	55.5	99	-0.11	**
23	68.1	29.497	55.8	99	-0.13	**
24	51.0	29.443	55.5	100	0.27	**
25	49.4	29.422	54.4	100	-0.10	380400
26	52.3	29.376	54.2	100	-0.10	316380
27	52.5	29.432	53.9	100	-0.10	392900
28	56.8	29.510	53.8	100	-0.11	222000
29	50.4	29.424	53.6	100	-0.10	**
30	55.4	29.342	53.3	100	-0.10	**
31	57.4	29.493	53.4	100	-0.10	**

ARITHMETIC

MEAN	59.6	29.483	52.5	100	0.29	116429
MAXIMUM	71.900	29.707	55.800	100.000	1.560	392900
MINIMUM	43.500	29.291	48.900	99.000	-0.130	47400
MEDIAN	57.4	29.479	53.3	100	-0.11	233500

Note: * - Data not available due to instrument calibration.

** - Data currently only scheduled for periodic collection.

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

SELECTED RADON DATA REPORT

3346

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: May, 1992

Day	NW (pCi/L)	SW (pCi/L)	NE (pCi/L)	SE (pCi/L)
1	0.8	1.1	1.9	0.6
2	0.5	0.7	1.8	0.3
3	1.0	1.5	2.5	1.0
4	0.9	1.4	2.7	1.7
5	0.9	1.2	2.2	0.8
6	0.8	1.1	1.9	0.7
7	0.9	1.3	1.9	0.9
8	*	1.2	1.9	0.5
9	*	1.0	1.8	0.5
10	*	1.6	2.3	1.0
11	1.1	1.9	2.7	1.6
12	3.3	1.9	3.1	2.1
13	2.8	0.9	1.7	0.6
14	*	1.2	2.0	0.8
15	*	1.1	1.8	0.4
16	*	1.8	2.5	1.5
17	*	1.6	2.4	1.2
18	*	0.9	1.7	0.5
19	*	0.8	1.5	0.4
20	*	1.5	2.0	0.9
21	*	1.6	2.2	1.1
22	*	1.5	1.6	1.2
23	*	1.4	1.4	1.0
24	*	0.6	0.6	0.3
25	*	0.8	0.4	0.3
26	*	1.0	0.6	0.8
27	*	1.0	0.7	0.6
28	*	1.6	1.6	1.0
29	*	1.4	1.0	0.8
30	*	0.7	0.4	0.3
31	*	0.7	0.6	0.4
AVERAGE	0.4	1.2	1.7	0.8
MAXIMUM	3.3	1.9	3.1	2.1
MINIMUM	0.5	0.6	0.4	0.3
MEDIAN	0.9	1.2	1.8	0.8

* Suspect Data, probable outlier

Daily values are based on 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: May, 1992

Day	AMS 5 (pCi/L)	AMS 6 (pCi/L)	PILOT PLANT (pCi/L)	BKGRD (pCi/L)
1	0.6	0.6	0.7	0.5
2	0.3	0.4	0.7	0.4
3	0.7	0.7	0.9	0.5
4	0.8	0.8	0.9	0.5
5	0.7	0.8	0.8	0.6
6	0.7	0.7	0.7	0.5
7	0.8	0.7	0.8	0.5
8	0.5	0.6	0.7	0.5
9	0.4	0.5	0.7	0.4
10	0.8	0.8	0.9	0.6
11	1.1	1.0	1.2	0.8
12	1.1	1.0	1.2	0.9
13	0.5	0.6	0.7	0.5
14	0.5	0.6	0.7	0.5
15	0.5	0.5	0.7	0.6
16	1.1	1.1	1.1	1.0
17	1.0	0.9	1.1	0.8
18	0.4	0.6	0.7	0.5
19	0.4	0.5	0.6	0.4
20	0.9	0.8	0.9	0.8
21	1.0	1.0	1.0	0.8
22	1.1	1.0	1.1	0.9
23	0.8	0.8	0.9	0.7
24	0.3	0.4	0.6	0.3
25	0.3	0.5	0.5	0.3
26	0.5	0.6	0.7	0.5
27	0.5	0.6	0.6	0.5
28	0.9	0.8	*	0.7
29	0.8	0.8	*	0.5
30	0.3	0.5	*	0.4
31	0.3	0.5	*	0.4
AVERAGE	0.7	0.7	0.7	0.6
MAXIMUM	1.1	1.1	1.2	1.0
MINIMUM	0.3	0.4	0.5	0.3
MEDIAN	0.7	0.7	0.7	0.5

* Suspect Data, probable outlier

Daily values are based on twenty four hourly averages

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

PERIOD ENDING MARCH 31, 1992

ENCLOSURE D

DRILLING/BORING LOGS

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Well Program		
BORING NUMBER: 2822	COORDINATES:	DATE: 05/12/92	
ELEVATION:	GWL: Depth 58.7	Date/Time: 5/12/92 10:50	DATE STARTED: 05/11/92
ENGINEER/GEOLOGIST: D.O'Brien	Depth	Date/Time	DATE COMPLETED: 05/27/92
DRILLING METHODS: Cable Tool	PAGE: 1		OF 16

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 10 IN	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (%SF)	REMARKS
1445	665001 5/13/92	7	6	medium stiff. 10YR (5/3) Brown silty clay, low plasticity slightly moist.	CI	75	H _{Nu} = 0 ppm R _S = 180 cpm
1445	665002 5/13/92	7	6	SAA, Hard	CI	4.0	
		9	0	No Recovery	NA	NA	
1455	665003 5/13/92	9	6	Hard, 2.54 (6/16) Olive yellow silty clay w/ gravel, no plasticity, dry	CI	4.0	H _{Nu} = 0 ppm R _S = 150 cpm
1455	665004 5/13/92	11	3	SAA	CI	4.0	
		17	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: 42 Cyclone

Driller: 51220 Joe BARILE - Flay Gordon
CRAIG COULTER

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

Stand: H_{Nu} = 0 ppm
R_S = 100-150 cpm

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

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602 04 19</u>	PROJECT NAME: <u>4- RCRA Well Program</u>	
DRILLING NUMBER: <u>2822</u>	COORDINATES:	DATE: <u>5/13/92</u>
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: <u>5/11/92</u>
ENGINEER/GEOLOGIST: <u>D. O'Brien</u>	Depth Date/Time	DATE COMPLETED: <u>5/27/92</u>
DRILLING METHODS: <u>Cable Tool</u>	PAGE <u>2</u> OF <u>10</u>	

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 FT	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
4	1503 065005	3	6	V. STIFF. 2.5Y (6/6) Olive yellow silty clay w/ gravel low plasticity, slightly moist	CI	3.25	H ₂ O = 0 ppm R ₈ = 160 cpm
	1503 065004	15	6	SAA	CI	2.5	
	1503 065007	22	0	No Recovery	NA	NA	
6	1503 065007	9	6	V. STIFF. 2.5Y (3/6) Light olive brown silty clay w/ gravel, low plasticity slightly moist	CI	3.75	H ₂ O = 0 ppm R ₈ = 150 cpm
	1503 065008	15	6	SAA	CI	3.75	
	1503	24	0	No Recovery	NA	NA	

NOTES:
 Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 42 Cyclone
JOE BARTLE & Jay Gardner
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

3346

PROJECT NUMBER: 602 04 19	PROJECT NAME: 4- RCRA Well Program	
BORING NUMBER: 2822	COORDINATES:	DATE: 5/13/92
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool	PAGE 3	OF 11

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 10 IN	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7	B30 065009	9	6	Hard 2.5y (3/4) Light olive brown, silty clay w/ gravel low plasticity, slightly moist	CI	4.0	H _{Nu} = 0 ppm R _s = 80 cpm
	5/13/92 1530	7	3	SAA	CI	4.0	
	4/18/92	9	0	No Recovery	NA	NA	
8		18	0	SAA	NA	NA	H _{Nu} = NA R _s = NA
		20	0	SAA	NA	NA	
		27	0	SAA	NA	NA	

NOTES:
 Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 42 Cyclone
 Operator: JOE BARTLE Elgy Gardner
CRAIG COULTER DSO 5/13/92
 SAA - SAME AS ABOVE
 NA - NOT APPLICABLE
 see p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Wall Program	
BORING NUMBER: 2322	COORDINATES:	DATE: 5/13/92
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool	PAGE 4	OF 16

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 10 IN	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
9.50	065011	6	6	V. STIFF. 2.5Y (5.4) Light olive brown, silty clay with gravel low plasticity slightly moist	Cl	2.0	H ₂ O = 0 ppm R ₈ = 100 cpm
10.50	065012	14	6	SAA	Cl	2.75	
11.50	065013	22	3	SAA, STIFF	Cl	1.75	
12.50	065014	2	6	STIFF, SAA	Cl	1.75	H ₂ O = 0 ppm R ₈ = 80 cpm
13.50	065015	6	6	Med. STIFF. 2.5Y (5.1) Gray gravelly clay, small amount of sand, medium plasticity, moist	Cl	.75	
14.50	065016	10	3	SAA	Cl	.5	

NOTES: SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: 42 Cyclone

Operator: JOE BARTLE Elroy Gardner 0505/13/92
CRAIG COULTER Sep. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Wall Program	
DRILLING NUMBER: 2822	COORDINATES:	DATE: 5/14/92
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool	PAGE: 5	OF 16

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY TSF	REMARKS
1010	065017 3/4" SAMP 5/14/92	3	6	STIFF, 2.5Y (SI) Gray, gravelly clay, med. plasticity slightly moist	CI	1.0	H ₂ O = 0 ppm R ₈ = 80 cpm
1010	065018 5/14/92	5	6	SAA, med. stiff	CI	.75	
1010	065019 5/14/92	7	3	SAA, soft	CI	.8	
1015	065020 5/14/92	3	6	SAA	CI	.5	H ₂ O = 0 ppm R ₈ = 60 cpm
1015	065021 5/14/92	4	6	SAA	CI	.8	
		0	0	No Recovery	NA	NA	

NOTES:
 Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 42 Cyclone
 Joe Barthe Elgy Gardner 050
 CRAIG COULTER 5/14/92
 SAA - SAME AS ABOVE
 NA - NOT APPLICABLE
 See p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Well Program	
BORING NUMBER: 2822	COORDINATES:	DATE: 5/14/92
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool	PAGE 6 OF 10	

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY (%)	DESCRIPTION	UNCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1025	065022	1	6	Soft, 2.57(51) Gray gravelly clay; medium plasticity, moist	CI 5/14/92	.5	HNU = 0 ppm R8 = 80 cpm
1025	065023	3	6	SAA	CI 5/14/92	.5	
16	065024	5	4	SAA, med. stiff	CI	.75	
1040	065025	2	6	SAA	CI	.5	HNU = 0 ppm R8 = 80 cpm
17	065026	3	6	SAA	CI	.5	
		6	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor Pennsylvania Drilling

Drilling Equipment 42 Cyclone

Operator: JOE BARILE Ray Gardner DSO
CRAIG COULTER 5/14/92

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

3346

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Wall Program		
BORING NUMBER: 2822	COORDINATES:	DATE: 5/14/92	
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth	Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool	PAGE 7		OF 10

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER UNIT	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (%SF)	REMARKS
1350	065027	2	6	Soft, 2.54 (5/16") Gray gravelly clay, high plasticity moist.	CI	.5	HNu = 0 ppm Bx = 100 cpm
1350	065028	2	6	SAA	CI	.5	
19		0	0	No Recovery	NA	NA	
1400	065029	2	0	SAA	NA	NA	HNu = NA Bx = NA
20		0	0	SAA	NA	NA	
		0	0	SAA	NA	NA	

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: 42 Cyclone

Operator: Jay Gardner
CRAIG COULTER 5/30 5/14/92

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

see p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Well Program	
BORING NUMBER: 2822	COORDINATES:	DATE: 5/14/92
ELEVATION:	GWL: Depth	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool	PAGE 8 OF 10	

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1800	065029	2	0	Soft, 2.5y (5/1) Gray very, gravelly clay some sand, high plasticity moist.	cl	.5	HNu = 0ppm R ₈ = 60cpm
		4	0	No Recovery	NA	NA	
22		7	0	No Recovery	NA	NA	
1815	065030	2	0	Soft, 2.5y (5/1) Gray, very gravelly, clay some sand, high plasticity, moist	cl	.5	HNu = 0ppm R ₈ = 60cpm
23		3	0	No Recovery	NA	NA	
		5	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 42 Cyclone
 Operator: JOP BARRE Elroy Gardner
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

see p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Well Program	
ORING NUMBER: 2822	COORDINATES:	DATE: 5/14/92
ELEVATION:	GWL: Depth	Date/Time
ENGINEER/GEOLOGIST: D. O'Brien	Depth	Date/Time
DRILLING METHODS: Cable Tool	PAGE: 9	OF 16

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (%SP)	REMARKS
1530	065031	2	6	Stiff, 2.54 (3/16) Gray gravelly clay med. plasticity moist.	ci	1.0	H ₂ O = 0 ppm R ₈ = 80 cpm
		4	0	No Recovery	NA	NA	
		8	0	No Recovery	NA	NA	
1840	065032	2	6	Stiff, 2.54 (3/16) Gray gravelly clay, medium plasticity, slightly moist	ci	1.0	H ₂ O = 0 ppm R ₈ = 80 cpm
1840	065033	11	6	SAA	ci	1.0	
		14	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: 42 Cyclone

Operator: Joe Barile Elroy Gardner

CRAIG COULTER

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

5/14/92

See p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 1602.04.19	PROJECT NAME: 4- RCRA Wall Program	
DWING NUMBER: 2822	COORDINATES:	DATE: 5/14/92
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5/14/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool	PAGE 10	OF 16

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 10 IN	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1550	065034	5	6	Stiff 2.5y (511) Gray gravelly clay, low plasticity, slightly moist	CI	1.5	H _{Nu} = 0 ppm B _x = 50 cpm
1550	065035	11	6	SAA	CI	1.5	
28		40	0	No Recovery	NA	NA	
1630	065036	20	6	Hard 2.5y (511) Gray gravelly clay. No plasticity slightly moist	CI	4.0	H _{Nu} = 0 ppm B _x = 60 cpm
29	065037	24	4	SAA	CI	4.0	
		30	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 42 Cyclone
 Operator: JOE BARTLE Elby Gardner 5/14/92
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602 04.19</u>	PROJECT NAME: <u>4- RCRA Wall Program</u>	
BORING NUMBER: <u>2822</u>	COORDINATES:	DATE: <u>5/14/92</u>
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: <u>5/11/92</u>
ENGINEER/GEOLOGIST: <u>D. O'Brien</u>	Depth Date/Time	DATE COMPLETED: <u>5/27/92</u>
DRILLING METHODS: <u>Cable Tool</u>	PAGE <u>11</u> OF <u>16</u>	

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (%SF)	REMARKS
16.50	065038	5	6	Hard 2.5Y (5/1) Gray gravelly clay, no plasticity slightly moist	cl	4.0	HNu = R8 = 80 cpm
16.50	065039	11	6	SAA	cl	4.0	
26		26	0	No Recovery	NA	NA	5/14/92
28.45	065040	7	6	V. STIFF. 2.5Y (5/1) Gray gravelly sandy clay, no plasticity, slightly moist	cl	3.0	HNu = 0 ppm R8 = 40 cpm
31	065041	31	6	V. Dense MOYR (1/6) Brownish yellow poorly graded sand, slightly moist	sp	NA	Base of Till at 32.0 ft
50/3		50/3	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: 42 Cyclone

Operator: John Hardina 5/19/92

CRAIG COULTER 050

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

see p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 1602.04.19	PROJECT NAME: 4- RCRA Well Program		
DRIING NUMBER: 2822	COORDINATES:		DATE: 5/19/92
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth	Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool			PAGE 12 OF 16

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
33.5	08850 0615042 5/19/92	22	5	V. Loose. 10YR (4/6) Brownish yellow. Poorly graded sand dry	SP	NA	H ₂ O = 0 ppm R ₈ = 60 cpm
34		2	0	No Recovery	NA	NA	
		2	0	No Recovery	NA	NA	
				Boys Sample every 5ft.			H ₂ O = NA R ₈ = NA

NOTES:

Drilling Contractor Pennsylvania Drilling

Drilling Equipment 42 Cyclone

JOE BARILE John Vandine

CRAIG COULTER

DJO
5/19/92

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

see p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>100-04-19</u>	PROJECT NAME: <u>4-RCRA Well Program</u>	
BORING NUMBER: <u>2822</u>	COORDINATES:	DATE: <u>5/19/92</u>
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: <u>5/11/92</u>
ENGINEER/GEOLOGIST: <u>D. O'Brien</u>	Depth Date/Time	DATE COMPLETED: <u>5/27/92</u>
DRILLING METHODS: <u>Cable Tool</u>	PAGE <u>13</u> OF <u>16</u>	

DEPTH FT	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 FT	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY %SF	REMARKS
41.5	0440 065043 5/19/92	20 21 50/4	10	V. Dense. 10YR (6/6) Brownish yellow poorly graded coarse sand, dry	SP	NA	H ₂ O = 0 ppm R ₈ = 60 cpm
45	1400 065044 5/19/92	11 50/4	8	V. Dense. 10YR (6/6) Brownish yellow poorly graded coarse sand, some gravel, dry	SP	NA	H ₂ O = 0 ppm R ₈ = 60 cpm
50	415 065045 5/19/92	28 49	12	V. Dense. 10YR (6/6) Brownish yellow, poorly graded coarse sand some gravel, dry	SP	NA	H ₂ O = 0 ppm R ₈ = 60 cpm
55	1030 065046 5/20/92	30/3	4	V. Dense. 10YR (6/6) Brownish yellow poorly graded coarse sand, moist	SP	NA	H ₂ O = 0 ppm R ₈ = 60 cpm
60	1030 065047 5/20/92	9 10	12	(4/6) 0505/1/12 Med. Dense. 10YR (6/6) Dark brownish yellow poorly graded coarse sand w/ gravel, wet	SP	NA	H ₂ O = 0 ppm R ₈ = 60 cpm Water table @ 57.0 ft
65	1335 065048 5/20/92	30 37 48	15	V. Dense. 10YR (4/6) Dark brownish yellow, well graded sand w/ gravel wet.	SW	NA	H ₂ O = 0 ppm R ₈ = 30 cpm

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: 42 Cyclone

Driller: ~~JOE BARTLE~~ John Vardine
CRAIG COULTER DSO 5/19/92

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

SEE P. 1

1-26805

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>10004.19</u>		PROJECT NAME: <u>4-RCRA Well Program</u>	
BORING NUMBER: <u>2822</u>		COORDINATES:	DATE: <u>5/20/92</u>
ELEVATION:		GWL: Depth Date/Time	DATE STARTED: <u>5/11/92</u>
ENGINEER/GEOLOGIST: <u>D. O'Brien</u>		Depth Date/Time	DATE COMPLETED: <u>5/27/92</u>
DRILLING METHODS: <u>Cable Tool</u>		PAGE <u>14</u> OF <u>16</u>	

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 10 IN	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
71.5	1350 63049 56019	10 20 17	12	Dense 10YR (4/10) Dark brownish yellow well sorted coarse sand with gravel. 40% Bottom of sampling at 71.5 ft	SW	NA	H _N = 0 ppm R _S = 40 cpm
75							H _N = R _S =
80							H _N = R _S =
							H _N = R _S =
							H _N = R _S =
							H _N = R _S =
							H _N = R _S =
							H _N = R _S =
							H _N = R _S =

NOTES:
 Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 42 Cyclone
 Driller: JOE BARTLE John Vandine
CRAIG COULTER 5/20/92

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

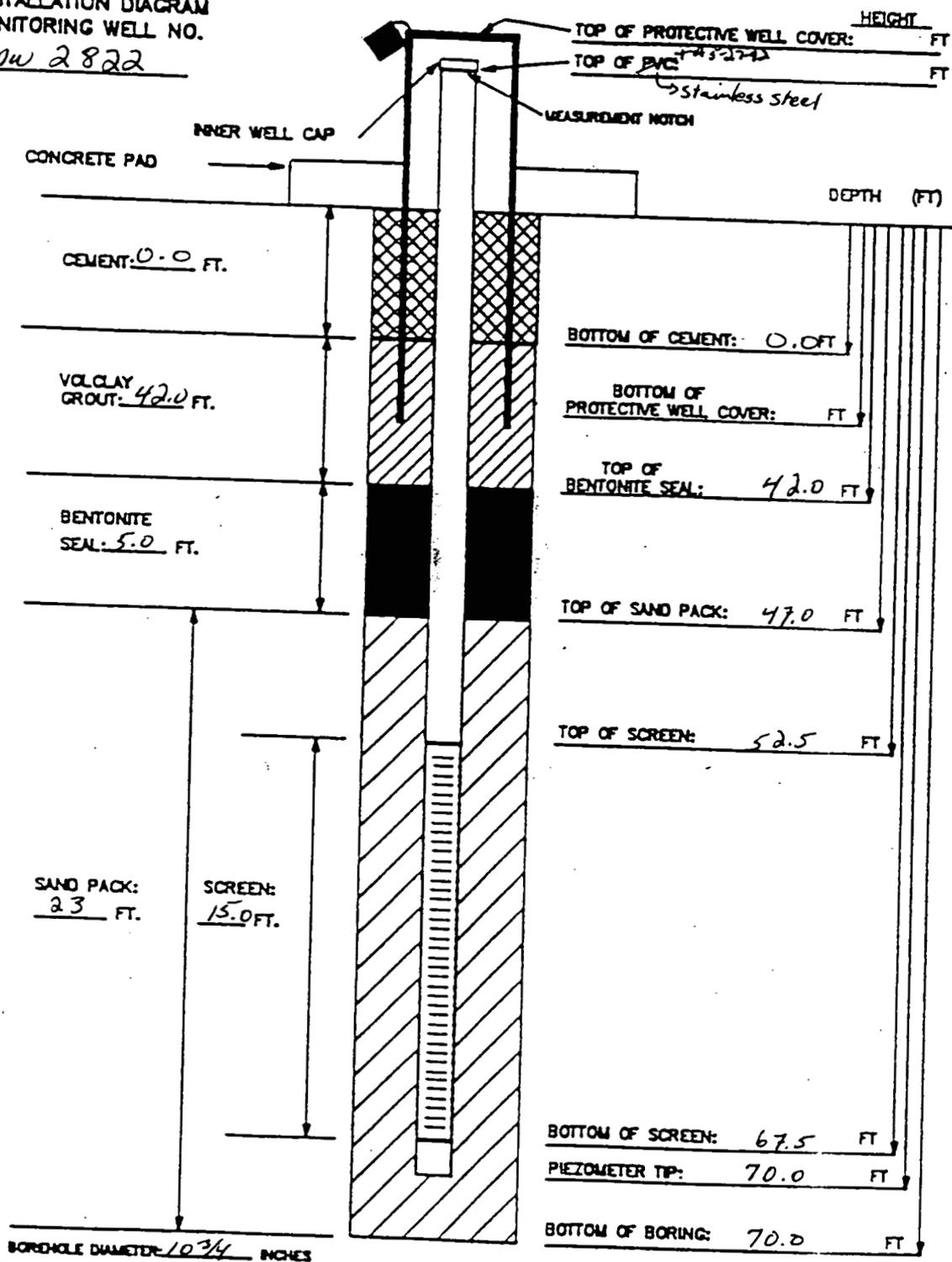
see p. 1

FERNALD RI/FS
INSTALLATION DIAGRAM
MONITORING WELL NO.

MW 2822

Stickups

INSTALLATION DATE: 5-26 to 5-27-92



MATERIALS USED:
 SAND TYPE AND QUANTITY: 16 bags of sand; 10/20
 BENTONITE PELLETS (5-GALLON BUCKETS): 4 buckets bentonite pellets
 BAGS OF VOLCLAY GROUT: 11 bags of Volclay grout
 AMOUNT OF CEMENT: N/A
 AMOUNT OF WATER USED:
 OTHER:

- NOTES:** 4-inch 5-27-92
- 1) RISER PIPE IS 4-INCH BOREHOLE TO stainless steel PVC PIPE, FLUSH-THREADED JOINTS. 5-27-92
 - 2) SCREEN IS 2-INCH LB. 60-EDGE TO 4" S.S. w/.000 slots PVC PIPE WITH 0.020-INCH SLOTS.
 - 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED SLAP.
 - 4) WATER DEPTH/DATE:

TASK: 602.04.19

GEOLOGIST/ENGINEER: T. Anderson

**FERNALD
RI/FS**

3346

PIEZOMETER INSTALLATION SHEET

TAS-27-92

PROJECT NAME FEMP RI/FS FIELD ENG./GEO. T. Anderson DATE 5-27-92
 PROJECT NO. 602.04.19 CHECKED BY _____ DATE _____
 BORING NO. MW 2822
 PIEZOMETER NO. 2822 DATE OF INSTALLATION 5-26-92 to 5-27-92

BOREHOLE DRILLING

DRILLING METHOD <u>Cable tool</u>	TYPE OF BIT <u>Cable tool bit</u>
DRILLING FLUID(S) USED: FLUID <u>water</u> FROM <u>0.0</u> TO <u>60.0</u> FLUID <u>n/a</u> FROM <u>n/a</u> TO <u>n/a</u>	CASING SIZE(S) USED: SIZE <u>10.0 in</u> FROM <u>0.0</u> TO <u>70.0 ft.</u> SIZE <u>n/a</u> FROM <u>n/a</u> TO <u>n/a</u>

PIEZOMETER DESCRIPTION

TYPE <u>Stainless Steel</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 checked="" type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>10.0 ft.</u>
AVERAGE SIZE OF PERFORATIONS <u>.010 inch</u>	JOINING METHOD <u>threaded - flush joints</u>
TOTAL PERFORATED AREA <u>15.0 ft.</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5.0 ft.</u>	OTHER PROTECTION <u>n/a - hinge locking cover with pool lock.</u>
PROTECTIVE PIPE O.D. <u>10 3/4 in</u>	

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (ft.)		ELEVATION ()	
TOP OF RISER PIPE				
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE				
BOREHOLE FILL MATERIALS:				
GROUT / SLURRY	TOP 0	BOTTOM 42.0	TOP	BOTTOM
BENTONITE	TOP 42.0	BOTTOM 47.0	TOP	BOTTOM
SAND	TOP 47.0	BOTTOM 70.0	TOP	BOTTOM
GRAVEL	TOP n/a	BOTTOM n/a	TOP	BOTTOM
PERFORATED SECTION	TOP 52.5	BOTTOM 67.5	TOP	BOTTOM
PIEZOMETER TIP	70.0 ft.			
BOTTOM OF BOREHOLE	70.0 ft.			
GWL AFTER INSTALLATION				

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

REMARKS _____

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Wall Program	
BORING NUMBER: 2822	COORDINATES:	DATE: 05/12/92
ELEVATION:	GWL: Depth 58.7 Date/Time 5/12/92	DATE STARTED: 05/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth Date/Time	DATE COMPLETED: 05/27/92
DRILLING METHODS: Cable Tool		PAGE 1 OF 16

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY IN	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (%)	REMARKS
1445	Q65001 5/13/92	7	6	medium Stiff, 10YR (5/3) Brown silty clay, low plasticity slightly moist.	CI	75	H _{Nu} = 0 ppm R _S = 180 cpm
1445	G65002 5/13/92	7	6	SAA, Hard	CI	4.0	
		9	0	No Recovery	NA	NA	
1455	Q65003 5/13/92	9	6	Hard, 2.54 (6/16) Olive yellow silty clay w/ gravel, no plasticity, dry	CI	4.0	H _{Nu} = 0 ppm R _S = 150 cpm
1455	Q65004 5/13/92	11	3	SAA	CI	4.0	
		17	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 42 Cyclone
 Driller: 5120 JAY BATTLE - Eloy Gordon
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE
 Blgd: H_{Nu} = 0 ppm
 R_S = 100-150 cpm

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

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 1602.04.19	PROJECT NAME: 4- RCRA Well Program	
TRING NUMBER: 2822	COORDINATES:	DATE: 5/13/92
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool	PAGE 2 OF 10	

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY % (SF)	REMARKS
	1503 065005	3	6	V. STIFF, 2.5Y (4/6) Olive yellow silty clay w/ gravel low plasticity, slightly moist	CI	3.25	H _{Nu} = 0 ppm R _S = 160 cpm
	1503 065006	15	6	SAA	CI	2.5	
4	1505 065007	22	0	No Recovery	NA	NA	
	1503 065007	9	6	V. STIFF, 2.5Y (3/6) Light olive brown silty clay w/ gravel, low plasticity slightly moist	CI	3.75	H _{Nu} = 0 ppm R _S = 150 cpm
5	1505 065008	15	6	SAA	CI	3.75	
		24	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 42 Cyclone
 Operator: JOE BARTLE / Craig Gardner
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Wall Program	
BORING NUMBER: 2822	COORDINATES:	DATE: 5/13/92
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool	PAGE 3 OF 11	

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY IN	DESCRIPTION	UICS SYMBOL	MEASURED CONSISTENCY % (BS)	REMARKS
	B30 063009	9	6	Hard 2.5Y (5/4) Light olive brown, silty clay w/ gravel low plasticity, slightly moist	CI	40	HNu = 0ppn Bs = 80 cpm
	5/13/92 B30 015010	7	3	SAA	CI	40	
7	4/13/92	9	0	No Recovery	NA	NA	
		18	0	SAA	NA	NA	HNu = NA Bs = NA
8		20	0	SAA	NA	NA	
		27	0	SAA	NA	NA	

NOTES: SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 42 Cyclone
 Operator: JOE BARTLE Elgy Gardner see p. 1
CRAIG COULTER DSO 5/13/92

VISUAL CLASSIFICATION OF SOILS

3346

PROJECT NUMBER: <u>602-04-19</u>	PROJECT NAME: <u>4- RCRA Well Program</u>		
DRILLING NUMBER: <u>2822</u>	COORDINATES:		DATE: <u>5/13/92</u>
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: <u>5/11/92</u>
ENGINEER/GEOLOGIST: <u>D. O'Brien</u>	Depth	Date/Time	DATE COMPLETED: <u>5/27/92</u>
DRILLING METHODS: <u>Cable Tool</u>			PAGE <u>4</u> OF <u>6</u>

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER FOOT	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
	0950 065011	6	6	V. STIFF. 2.5y (5/4) light olive brown, silty clay with gravel low plasticity slightly moist	Cl	2.0	H ₂ O = 0 ppm R ₈ = 100 cpm
	0950 065012	14	6	SAA	Cl	2.75	
10	0950 065013	22	3	SAA, stiff	Cl	1.75	
	0950 065014	2	6	Stiff, SAA	Cl	1.75	H ₂ O = 0 ppm R ₈ = 80 cpm
11	065015	6	6	Med. stiff. 2.5y (5/1) Gray gravelly clay, small amount of sand, medium plasticity, moist	Cl	.75	
	065016	10	3	SAA	Cl	.5	

NOTES: SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 42 Cyclone
 Operator: JOE BARTLE Elroy Gardner 0508/13/92
CRAIG COULTER See p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Well Program	
BORING NUMBER: 2822	COORDINATES:	DATE: 5/14/92
ELEVATION:	GWL: Depth	Date/Time
ENGINEER/GEOLOGIST: D. O'Brien	Depth	Date/Time
DRILLING METHODS: Cable Tool	PAGE 5 OF 16	

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 10 IN	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1010	065017 3/14/92	3	6	STIFF, 2.5Y (SI) Gray, gravelly clay, med. plasticity slightly moist	CI	1.0	H ₂ O = 0 ppm R ₈ = 80 cpm
1010	065018 3/14/92	5	6	SAA, med. stiff	CI	.75	
1010	065019 3/14/92	7	3	SAA, soft	CI	.8	
1015	065020 3/14/92	3	6	SAA	CI	.5	H ₂ O = 0 ppm R ₈ = 60 cpm
1015	065021 3/14/92	4	6	SAA	CI	.8	
		5	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor Pennsylvania Drilling

Drilling Equipment 42 Cyclone

Operator: JOE BARRE Elgy Gardner
CRAIG COULTER

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4-RCRA Well Program	
BORING NUMBER: 2822	COORDINATES:	DATE: 5/14/92
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool		PAGE 10 OF 10

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 100mm	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (%SF)	REMARKS
15	1023 065022	1	6	Soft, 2.5Y(5/1) Gray gravelly clay; medium plasticity, moist	CL	.5	H _{Nu} = 0 ppm R ₈ = 80 cpm
16	1023 065023	3	6	SAA	CL	.5	
16	1023 065024	5	4	SAA, med. stiff	CL	.75	
16	1040 065025	2	6	SAA	CL	.5	H _{Nu} = 0 ppm R ₈ = 80 cpm
17	1040 065026	3	6	SAA	CL	.5	
		6	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor Pennsylvania Drilling

Drilling Equipment 42 Cyclone

Operator: JOE BARILE / Ray Gardner DSO
CRAIG COULTER 5/14/92

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Well Program		
BORING NUMBER: 2822	COORDINATES:	DATE: 5/14/92	
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth	Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool	PAGE 7		OF 10

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN 1	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1350	065027	2	6	Soft, 2.54 (5/16") Gray gravelly clay, high plasticity moist.	CI	.5	H _{Nu} = 0 ppm R _X = 100 cpm
1350	065028	3	6	SAA	CI	.5	
19		0	0	No Recovery	NA	NA	
1400	065029	2	0	SAA	NA	NA	H _{Nu} = NA R _X = NA
20		0	0	SAA	NA	NA	
		6	0	SAA	NA	NA	

NOTES:
 Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 42 Cyclone
 by: Joe Barthe Flay Gardner
CRAIG COULTER DSO 5/14/92
 SAA - SAME AS ABOVE
 NA - NOT APPLICABLE
 see p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Well Program	
ORING NUMBER: 2822	COORDINATES:	DATE: 5/14/92
ELEVATION:	GWL: Depth	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool	PAGE 8 OF 10	

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 10 IN	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1800	065029	2	6	Soft, 2.5y (511) Gray very gravelly clay some sand, high plasticity moist.	cl	.5	H ₂ O = 0ppm R ₈ = 60cpm
		4	0	No Recovery	NA	NA	
22		7	0	No Recovery	NA	NA	
1815	065030	2	6	Soft, 2.5y (511) Gray, very gravelly clay some sand, high plasticity, moist	cl	.5	H ₂ O = 0ppm R ₈ = 60cpm
		3	0	No Recovery	NA	NA	
23		5	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: 42 Cyclone

Operator: JOE BARTE Elroy Gardner
CRAIG COULTER

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

See p. 1

DSD
5/14/92

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Well Program	
BORING NUMBER: 2822	COORDINATES:	DATE: 5/14/92
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool	PAGE 9	OF 16

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 in	RECOVERY in	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (%SF)	REMARKS
	1530 QUS531	2	6	Stiff, 2.54 (1/1) Gray gravelly clay med. plasticity, moist.	cl	1.0	HNu = 0 ppm R8 = 80 cpm
	5/14/92						
		4	0	No Recovery	NA	NA	
25		8	0	No Recovery	NA	NA	
	1540 QUS532	2	6	Stiff, 2.54 (1/1) Gray gravelly clay, medium plasticity, slightly moist	cl	1.0	HNu = 0 ppm R8 = 80 cpm
26	5/14/92 1540						
	QUS533	11	6	SAA	cl	1.0	
	5/14/92						
		14	0	No Recovery	NA	NA	

NOTES:
 Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 42 Cyclone DSS 5/14/92
~~Jay Bartle~~ Elay Gardner
CRAIG COULTER See p. 1

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER. <u>602.04.19</u>	PROJECT NAME. <u>4-RCRA Well Program</u>	
BORING NUMBER: <u>2822</u>	COORDINATES:	DATE <u>5/14/92</u>
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: <u>5/14/92</u>
ENGINEER/GEOLOGIST. <u>D.O'Brien</u>	Depth Date/Time	DATE COMPLETED: <u>5/27/92</u>
DRILLING METHODS: <u>Cable Tool</u>		PAGE <u>10</u> OF <u>16</u>

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 10 IN	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (%SF)	REMARKS
28	1550 <u>065034</u> 5/14/92	5	6	Stiff 2.5y (Bl) Gray granuley clay, low plasticity, slightly moist	cl	1.5	HNu = 0 ppm R _x = 50 cpm
	1550 <u>065035</u> 5/14/92	11	2	SAA	cl	1.5	
		40	0	No Recovery	NA	NA	
29	1630 <u>065036</u> 5/14/92	20	6	Hard 2.5y (Bl) Gray granuley clay. No plasticity slightly moist	cl	4.0	HNu = 0 ppm R _x = 60 cpm
	1630 <u>065037</u> 5/14/92	24	4	SAA	cl	4.0	
		30	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor Pennsylvania Drilling

Drilling Equipment 42 Cyclone

JOE BARILE Elby Gardner 050
CRAIG COULTER 5/14/92

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER. <u>602.04.19</u>	PROJECT NAME. <u>4- RCRA Well Program</u>	
BORING NUMBER: <u>2822</u>	COORDINATES:	DATE <u>5/14/92</u>
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: <u>5/11/92</u>
ENGINEER/GEOLOGIST. <u>D. O'Brien</u>	Depth Date/Time	DATE COMPLETED: <u>5/27/92</u>
DRILLING METHODS: <u>Cable Tool</u>	PAGE <u>11</u> OF <u>16</u>	

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 in	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (%)	REMARKS
10.50	065035	5	6	Hard. 2.5Y (5/1) Gray granully clay, no plasticity slightly moist	cl	4.0	H _{Nu} = R ₈ = 80 cpm
11.50	065039	11	6	SAA	cl	4.0	
21.50		26	0	No Recovery	NA	NA	5/14/92
27.50	065040	7	6	V. Stiff. 2.5Y (5/1) Gray granully sandy clay, no plasticity, slightly moist	cl	3.0	H _{Nu} = 0 ppm R ₈ = 40 cpm
31.50	065041	31	6	V. Dense MOYR (6%) Brownish yellow poorly graded sand, slightly moist	sp	NA	Base of Till at 32.0 ft
50.3		0	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor Pennsylvania Drilling

Drilling Equipment 42 Cyclone

Operator: JOE BARTLE John Kardine 5/19/92
CRAIG COULTER 050

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE.

see p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Well Program	
BORING NUMBER: 2822	COORDINATES:	DATE: 5/19/92
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5/11/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth Date/Time	DATE COMPLETED: 5/27/92
DRILLING METHODS: Cable Tool		PAGE 12 OF 16

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 10 IN	RECOVERY (IN)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
32.50	06550 065542	22	5	V. Loose. 10YR (6/6) Brownish yellow. Poorly graded sand org	SP	NA	HNU = 0 ppm BS = 60 cpm
33.00		2	0	No Recovery	NA	NA	
33.50		2	0	No Recovery	NA	NA	
34.00				Regr Sample every 5ft.			HNU = NA BS = UA
34.50							
35.00							
35.50							
36.00							

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: 42 Cyclone

Drillers: JOE BARTLE John Vandine

CRAIG COULTER 5/27/92

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

see p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>10020419</u>	PROJECT NAME: <u>4-RCRA Well Program</u>	
BORING NUMBER: <u>2822</u>	COORDINATES:	DATE: <u>5/19/92</u>
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: <u>5/11/92</u>
ENGINEER/GEOLOGIST: <u>D.O'Brien</u>	Depth Date/Time	DATE COMPLETED: <u>5/27/92</u>
DRILLING METHODS: <u>Cable Tool</u>	PAGE 13 OF 16	

DEPTH FT	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY % (SF)	REMARKS
41.5	065043 5/19/92	20 15/14	10	V. Dense. 10YR (6/6) Brownish yellow poorly graded coarse sand, dry	SP	NA	H ₂ O = 0 ppm R ₈ = 60 cpm
46.5	065044 5/19/92	11 50/4	8	V. Dense 10YR (6/6) brownish yellow poorly graded coarse sand, some gravel, dry	SP	NA	H ₂ O = 0 ppm R ₈ = 60 cpm
51.5	065045 5/19/92	20 59	12	V. Dense. 10YR (6/6) Brownish yellow, poorly graded coarse sand some gravel, dry	SP	NA	H ₂ O = 0 ppm R ₈ = 60 cpm
57.5	065046 5/20/92	20/3	4	V. Dense. 10YR (6/6) Brownish yellow poorly graded coarse sand, moist	SP	NA	H ₂ O = 0 ppm R ₈ = 60 cpm
61.5	065047 5/20/92	12 9 10	12	(4/6) 250/142 Med. Dense 10YR (6/6) Dark brownish yellow poorly graded coarse sand w/ gravel, wet	SP	NA	H ₂ O = 0 ppm R ₈ = 60 cpm Water table @ 57.0 ft
66.5	065048 5/20/92	20 37 48	15	V. Dense. 10YR (4/6) Dark brownish yellow, well graded sand w/ gravel wet.	SW	NA	H ₂ O = 0 ppm R ₈ = 30 cpm

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: 42 Cyclone

Driller: John Vardine
CRAIG COULTER

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

see p. 1

DSO
5/19/92

1-26806

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>W02-04-19</u>		PROJECT NAME: <u>4-RCRA Well Program</u>	
BORING NUMBER: <u>2822</u>		COORDINATES:	DATE: <u>5/20/92</u>
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: <u>5/11/92</u>
ENGINEER/GEOLOGIST: <u>D. O'Brien</u>	Depth	Date/Time	DATE COMPLETED: <u>5/27/92</u>
DRILLING METHODS: <u>Cable Tool</u>			PAGE <u>14</u> OF <u>16</u>

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 in	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
71.5	<u>1355 GK049 5/20/92</u>	<u>10 20 17</u>	<u>12</u>	<u>Dense 10YR(4/10) Dark brownish yellow well graded coarse sand with gravel. 4ft</u>	<u>SW</u>	<u>NA</u>	<u>HNUE 0ppm R8 = 40cpm</u>
				<u>Bottom of sampling at 71.5 ft</u>			
75							<u>HNUE R8 =</u>
80							<u>HNUE R8 =</u>
							<u>HNUE R8 =</u>
							<u>HNUE R8 =</u>
							<u>HNUE R8 =</u>
							<u>HNUE R8 =</u>

NOTES:

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 42 Cyclone
 Driller: JOE BARTLE John Vandine
CRAIG COULTER 5/20/92

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

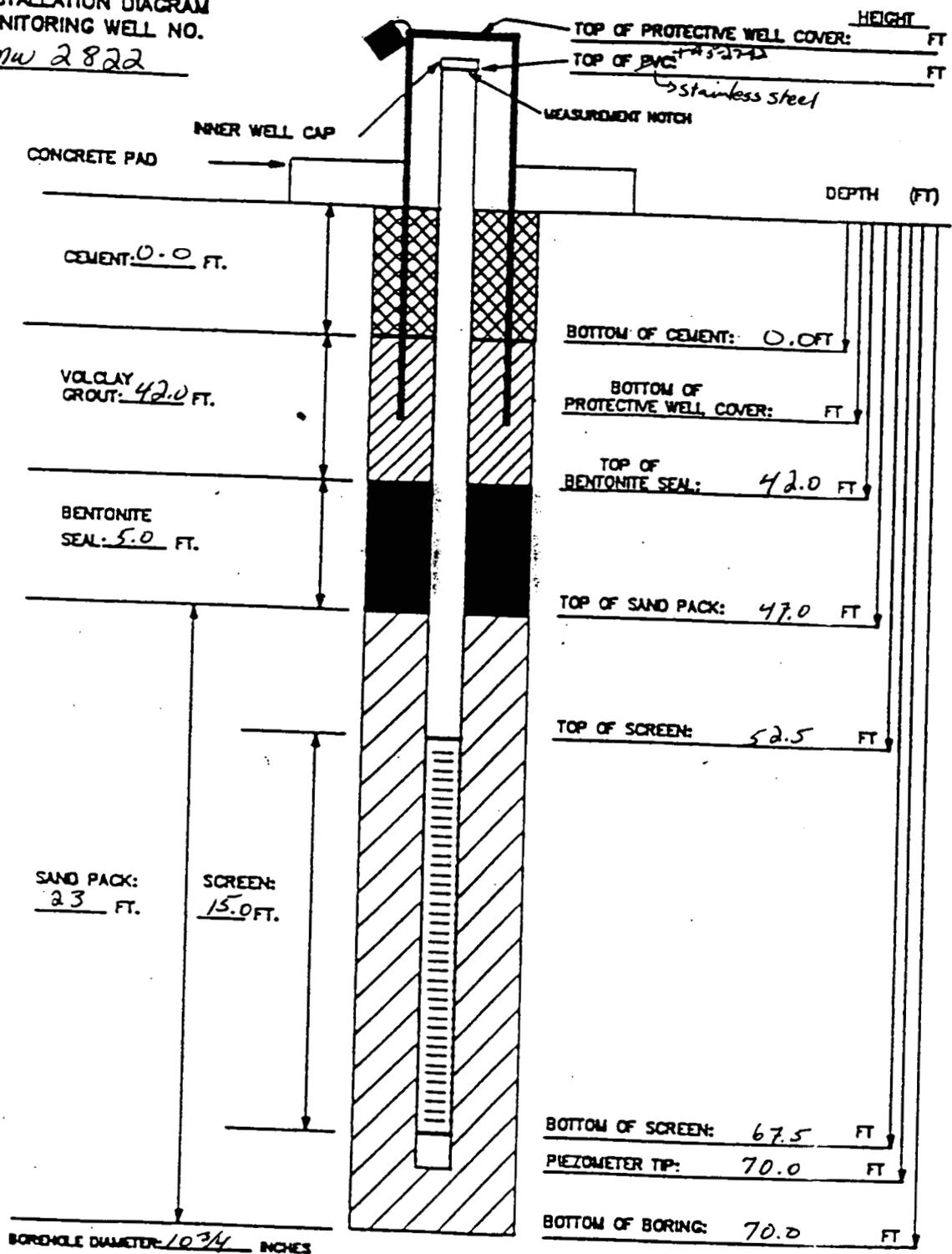
see p. 1

FERNALD RI/FS
INSTALLATION DIAGRAM
MONITORING WELL NO.

Stickups

INSTALLATION DATE: *5-26 to 5-27-92*

mw 2822



MATERIALS USED:

- SAND TYPE AND QUANTITY: *16 bags of sand; 10/20*
- BENTONITE PELLETS (5-GALLON BUCKETS): *4 buckets bentonite pellets*
- BAGS OF VOLCLAY GROUT: *11 bags of Volclay grout*
- AMOUNT OF CEMENT: *N/A*
- AMOUNT OF WATER USED:
- OTHER:

NOTES:

- 1) RISER PIPE IS *4-inch - 5-27-92* SCHEDULE 40 stainless steel PVC PIPE, FLUSH-THREADED JOINTS.
- 2) SCREEN IS 2-INCH I.D. SCHEDULE 40 4" S.S. w/ .010 slots PVC PIPE WITH .020-INCH SLOTS.
- 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED STOP.
- 4) WATER DEPTH/DATE:

TASK: *602.04.19*

GEOLOGIST/ENGINEER: *T. Anderson*

**FERNALD
RI/FS**

PIEZOMETER INSTALLATION SHEET

TA5-27-92

PROJECT NAME FEMP RI/FS FIELD ENG./GEO. T. Anderson DATE 5-27-92
 PROJECT NO. 602.04.19 CHECKED BY _____ DATE _____
 BORING NO. MW 2822
 PIEZOMETER NO. 2822 DATE OF INSTALLATION 5-26-92 to 5-27-92

BOREHOLE DRILLING

DRILLING METHOD <u>Cable tool</u>	TYPE OF BIT <u>Cable tool bit</u>
DRILLING FLUID (S) USED: FLUID <u>water</u> FROM <u>0.0</u> TO <u>60.0</u> FLUID <u>n/a</u> FROM <u>n/a</u> TO <u>n/a</u>	CASING SIZE (S) USED: SIZE <u>10.0 in</u> FROM <u>0.0</u> TO <u>70.0 ft.</u> SIZE <u>n/a</u> FROM <u>n/a</u> TO <u>n/a</u>

PIEZOMETER DESCRIPTION

TYPE <u>Stainless Steel</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 checked="" type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>10.0 ft.</u>
AVERAGE SIZE OF PERFORATIONS <u>.010 inch</u>	JOINING METHOD <u>threaded - flush joints</u>
TOTAL PERFORATED AREA <u>15.0 ft.</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5.0 ft.</u>	OTHER PROTECTION <u>n/a - hinge locking cover with pad lock.</u>
PROTECTIVE PIPE O.D. <u>10 3/4 in</u>	

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (ft.)		ELEVATION ()	
	TOP	BOTTOM	TCP	BOTTOM
TOP OF RISER PIPE				
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE				
BOREHOLE FILL MATERIALS:				
GROUT/SLURRY	TOP 0	BOTTOM 42.0	TCP	BOTTOM
BENTONITE	TOP 42.0	BOTTOM 47.0	TOP	BOTTOM
SAND	TOP 47.0	BOTTOM 70.0	TOP	BOTTOM
GRAVEL	TOP n/a	BOTTOM n/a	TOP	BOTTOM
PERFORATED SECTION	TOP 52.5	BOTTOM 67.5	TOP	BOTTOM
PIEZOMETER TIP	70.0 ft.			
BOTTOM OF BOREHOLE	70.0 ft.			
GWL AFTER INSTALLATION				

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

REMARKS _____

3725