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CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

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Introduction

The Consent Agreement (CA) As Amended under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 120 and 106(a), the Federal Facility Compliance Agreement (FFCA), and the Federal Facility Agreement for Control and Abatement of Radon-222 Emissions (FFA-CARE) 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 September 1 through September 30, 1992, and planned actions for the period October 1 through October 31, 1992.

Highlights of activities in September include the following:

- A proposed plan of action to resume work on Removal Action No. 3, South Groundwater Contamination Plume, Part 2B1-Outfall Cofferdam, received oral approval from the U.S. and Ohio EPAs at the monthly managers meeting.
- The FY1992 goal of shipping 100,000 drum equivalents of low-level waste off site was exceeded. The final FY1992 total was 100,595 drum equivalents.
- Ohio EPA comments on preliminary results of the walk-over survey and options for soil excavation in Removal Action No. 14, Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator were received. Excavation activities and sampling began.
- Phase IIA, containerization of scrap copper, associated with Removal Action No. 15, entitled "Scrap Metal Piles," began on September 29.

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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.

CA Section IX. Removal Actions

This section provides an update of activities associated with the implementation of Removal Actions (RAs) at the FEMP during September 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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Phase II Removal Actions

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

Phase III Removal Actions

- RA No. 19, Plant 7 Dismantling.
- RA No. 20, Stabilization of UNH Inventories.
- RA No. 21, Expedited Silo 3.
- RA No. 22, Waste Pit Area Containment Improvement.
- RA No. 23, Inactive Flyash Pile.
- 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 September 1992, approximately 33,474 gallons of perched groundwater have been extracted and transported for treatment to the Plant 8 Volatile Organic Compound (VOC) treatment system. A proposal was made to add the Plant 6 Motor Bay sump water to this action. After oral concurrence from the U.S. EPA and the Ohio EPA, the drums of wastewater previously collected from these sumps were transferred to Plant 8 for treatment. Future water collected in temporary storage will likewise be transferred to Plant 8 for treatment. Plans are underway to provide permanent piping and tankage for handling this additional water.

An addendum to the Plant 6 Contaminated Perched Water Modified Removal Action Work Plan is being prepared. When review is complete, this addendum will be transmitted to the U.S. and Ohio EPAs. This addendum reflects the additional treatment of the waters from the four Plant 6 Motor Bay Sumps to the Interim 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 September 1992, approximately 115,467 gallons of perched water have been collected for treatment from Plant 2/3 and approximately 82,822 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 1992.

Plant 9 - Pumping from Plant 9 began on August 20, 1991. Approximately 22,121 gallons of Plant 9 perched water have been extracted and transported to Plant 8 through September 1992.

Plant 8 - The start-up date for the Plant 8 treatment system was July 24, 1991. Through September 1992, approximately 249,788 gallons of groundwater have been treated utilizing the Plant 8 treatment system. The Plant 8 filter elements are being reworked to address recent problems which have arisen. The new filters are projected to be in operation in October 1992. 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 with subsequent treatment in the Interim Plant 8 VOC Treatment System followed by uranium removal in the Plant 8 Wastewater Treatment System will continue in accordance with the Work Plan provisions in keeping with the revised operable unit descriptions in the Amended Consent Agreement. Treatment will continue in this manner until the Advanced Waste Water Treatment (AWWT) Phases I and II are operational in 1994.

Future actions include completing plans and installing new filter units in Plant 8, issuing the Plant 6 Addendum for U.S. and Ohio EPA approval, and initiating design of Plant 6 Motor Bay Sump pumping.

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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 were initiated on June 6, 1991. All construction for the Waste Pit Area Runoff Control Removal Action was completed on June 15, 1992.

Activities in September included closing the Removal Action Cost Account. This included finalizing all financial administrative requirements and the submittal of all final financial paperwork.

There are no planned activities for October; this removal action will be closed.

KEY MILESTONES	STATUS	DUE DATE
Completion of construction	Completed June 15, 1992	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 & 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 revised Work Plan (Revision 1) was prepared and issued to the EPAs to reflect this and other changes which have occurred. A summary of the most recent and ongoing activities for Part 1 are listed below:

- The contractor was remobilized and began work on Mandery Trust property on September 9, 1992.

- The DOE was notified by the U.S. Department of Justice that twenty days must be allowed for the property owners to respond to the U.S. District Court Judge on the condemnation requests. The twenty-day period for response has elapsed, but construction access has not been obtained from these property owners.

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Part 2

To expedite the Part 2 construction, this project was divided into five 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; 2B1 - Manhole 183B to Great Miami River; 2B2 - Aeration Facility; 2C - Recovery well field; and 2D - Test well installation and pump test. Part 2 follow-on activities include:

- Conditional approval (pending incorporation of comments) was received from the U.S. EPA on the South Plume Groundwater Recovery System Design, Monitoring, and Evaluation Program Plan (DMEPP) on August 28, 1992. Comments were also received from the Ohio EPA on August 26, 1992. This document was previously submitted under the title "South Plume Groundwater Extraction System Operation and Maintenance Manual."

- Responses to EPA comments on the Soil and Rubble Sampling and Analysis Plan for Part 2 and Part 3 concerning the characterization and disposition of soils have been prepared. The plan has been revised to establish fourteen Project Specific Zones of Contamination to ensure the proper segregation of potentially radiologically and potentially organically contaminated soil stockpiles. The revised plan will be issued in October.

- On September 28, 1992, U.S. EPA approved an extension of the scheduled milestone date from January 29, 1993, to August 28, 1993. The extension was required to incorporate condemnation of two properties.

- Package 2A - Discharge Pipeline: Construction was delayed at the river due to the discovery of contamination. The area was secured to prevent inadvertent access. The contamination was removed, and normal construction activities were resumed.

- Package 2B1 - Outfall Cofferdam:

  - Work was suspended due to the discovery of contaminated soil and rubble. A proposed plan of action essentially maintains the existing design for the outfall line installation, but adds more administrative controls and monitoring requirements into the construction phase. The plan also calls for the installation of the final outfall pipe sections, underwater, within the excavated cofferdam. This action will eliminate the need to pump potentially contaminated water from within the cofferdam to the Great Miami River. The proposal was presented to the U.S. and Ohio EPAs at the monthly managers meeting and received verbal approval. The proposal was subsequently presented to the Fernald Residents for Environment, Safety and Health (FRESH) without any significant comments received.

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

- Package 2B2 - Dissolved Oxygen: Bids were received on September 23, 1992. A Construction Work Order (CWO) was issued September 30, 1992.

- Package 2C - Wellfield and 2D - Test Well: Bids were received and opened on September 29, 1992; the CWO was issued September 30, 1992. However, the Notice-to-Proceed will be delayed significantly due to the need to condemn the properties where these projects are located.

Part 3

The Work Plan for Part 3 (the installation and operation of an Interim Advanced Wastewater Treatment (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 to maintain the 1,700 pound per year maximum level. The IAWWT system includes two treatment units. The IAWWT unit located at the Storm Water Retention Basin (IAWWT[SWRB]) consists of two trailer-mounted assemblies, each with a nominal 150 gpm capacity or a total nominal 300 gpm capacity. The unit located at the Biodenitrification Effluent Treatment System (IAWWT[BDN-ETS]) has a nominal capacity of 100 gpm. Current activities are as follows:

IAWWT(SWRB) Unit

The IAWWT unit at the SWRB continues to operate successfully.

IAWWT(BDN-ETS) Unit

The IAWWT(BDN-ETS) remains shut down because of the solids problem encountered on this unit. Conceptual plans are being prepared to provide flocculation and settling of the IAWWT(BDN-ETS) influent.

Part 4

Part 4 of the South Groundwater Contamination Plume Removal Action Work Plan involves groundwater monitoring and institutional controls. Current activities are as follows:

- Quarterly sampling will be performed in October.

- Bottled water continues to be supplied to seven private residences in the South Plume Area.

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Part 5

Part 5 was added to the South Plume in order to address the relocation of the Part 2 well field. It 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.

- On September 25, 1992, the U.S. EPA completed its review of the response to comments on the Operable Unit 5 Work Plan and the Revised Soil Vapor Procedures. Response to comments and the revised procedure satisfactorily addressed all U.S. EPA's comments. Comments need to be incorporated into the Work Plan.

Work in October for RA No. 3, Parts 1 - 5 will focus on the following:

- Part 2: Prepare response to DMEPP comments to U.S. and Ohio EPAs. Issue revised Work Plan to U.S. and Ohio EPAs.
- Part 3: Prepare conceptual design for IAWWT(BDN-ETS) coagulation/flocculation system.
- Part 4: Perform quarterly sampling of RI/FS and homeowner wells.
- Part 5: Incorporate U.S. and Ohio EPA comments into a revised Part 5 Work Plan.

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.

As previously discussed at the Program Managers' Meeting on July 21, 1992, the DOE is preparing a paper detailing a revised method for evaluating the effectiveness of the bentonite in the silos. The reduction in radon emanation, as a result of bentonite installation, can be evaluated more thoroughly and consistently using analytical methods to measure the radon concentration in the silo headspace and by analyzing the relationship of these results to observed radon concentration in the vicinity of the silos and at the site boundary. This package is expected to be completed in October 1992, to provide adequate time for the incorporation and evaluation of hourly headspace data for both the months of July, August, and September 1992, as well as the analysis of observed radon data from outside of the silos.

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

Construction acceptance of the Removal Action No. 4, Silos 1 and 2, data logging system is expected to be completed October 9, 1992. The data logging system, will automatically records data generated from the headspace radon monitoring, headspace humidity monitoring, and temperature and pressure monitoring of Silos 1 and 2. Also data from four radon gas monitors in the K-65 area exclusion will be recorded.

Work in October will also include the turnover of the data logging system to Operable Unit 4 and evaluating the system from an operations and maintenance standpoint.

As defined in the Removal Action Work Plan and the FFA-CARE, data associated with monitoring the effectiveness of the bentonite installation is included in Enclosure C.

KEY MILESTONES	STATUS	DUE DATE
Complete installation of bentonite slurry into Silos 1 and 2	Completed November 28, 1991	December 1, 1991
Submit Bentonite Monitoring Plan	Completed January 27, 1992	January 27, 1992
Report monitoring results for bentonite effectiveness 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. Treatment of the decant liquid based on the MEF and available analytical results was completed on May 12, 1992.

The Removal Action Final Report was submitted to the Ohio EPA and the U.S. EPA in August. Comments received on September 25 and October 2 are currently being addressed.

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RA No. 5, K-65 Decant Sump Tank (continued)

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 fugitive emissions of radionuclides. The installation of the four air monitors was completed in July. This project is closed.

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. 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.

September activities included the erection of the second tension support structure. The installation of the fabric covering for the first tension support structure was completed in September. The concrete work of the Phase II pad was completed.

October activities will include: the installation of the fabric covering of the second tension support structure; the installation of lighting, powered over-head doors, and emergency exit doors in the first structure; and completion of the grading around the perimeter.

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RA No. 7, Plant 1 Pad Continuing Release (continued)

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.

RA No. 9, Removal of Waste Inventories

During September 1992, 5,907 drum equivalents (DE) of low-level waste (LLW) were dispositioned. The September goal for shipments was 7,390 DEs. The surplus of DEs shipped during August and September was adequate to exceed the FY1992 FEMP LLW shipping goal by 595 DEs. The FY1992 total LLW shipped is 100,595 DEs.

KEY MILESTONES	STATUS	DUE DATE
Update existing internal procedures to ensure that appropriate shipping documentation is entered into the administrative record file	On schedule (To be updated annually)	June 30,1993

The FEMP continued shipping low-level thorium waste during September. Twelve thorium shipments (482 drums) were made without incident. The FY1993 shipping schedule was submitted on September 30, 1992.

Activities for October include continuing low-level thorium waste shipments. Shipping 4,416 DEs of LLW is anticipated. The key assumptions in meeting the FY1993 shipping goal are:

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RA No. 9, Removal of Waste Inventories (continued)

DOE-NV approval of the FEMP Low Level Waste Shipping Application to dispose of waste at the Nevada Test Site.

RCRA determinations will be completed for backlog and currently generated Construction/Removal Action Wastes which will release 47,000 DEs for disposal.

DOE-NV approval of additional thorium waste streams (December 1992).

Resolution of the Land Disposal Restriction (LDR) issues preventing the draining of fluids from scrap gasoline powered vehicles prior to disposal (March 1993).

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 (Phase I), to provide wind and surface water run-off control at the Active Flyash Pile, and the remainder of the removal action (Phase II), were completed on June 29, 1992. Any required maintenance will be conducted on an ongoing basis.

The potential use of active and inactive flyash pile material as an additive in controlled low strength material (CLSM) is being investigated. Use of CLSM has become popular as a replacement for compacted granular material in backfill, structural fill, and slope stability applications.

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	Completed June 29, 1992	June 30, 1992
Phase II - Complete Active Fly Ash Pile Controls.	Completed June 29, 1992	October 28, 1993

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RA No. 11, Pit 5 Experimental Treatment Facility

RA No. 11 was completed. The removal of the contents, structure, and filter material for the Experimental Treatment Facility (ETF) was completed 22 days ahead of schedule. De-mobilization of the ETF Project has been completed. It was backfilled and capped, using a clay cover.

Activities for September included the preparation of the Removal Action Final Report.

Planned activities for October include the issuance of the Removal Action Final Report.

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

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	On schedule (To be updated annually)	June 30, 1993

The assessments of in-process residues and equipment for each major process area are continuing. Plants 1, 2/3, 4, 5, 8, and 9 have been completed. (Plant 5 was completed during September.) Plants 6 and the Pilot Plant are in rough draft form.

Inventorying of expense equipment items continued; 2,722 expense items are currently in the data base; 1,255 have been field verified, 578 are on a "shopping list" to ascertain on-site use, 35 have been transferred to Maintenance, and 102 have been placed on AC-563 Forms to be excessed.

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RA No. 12, Safe Shutdown (continued)

The capital equipment inventory continued; of an estimated 1,688 total number of items, 1,146 have been put on AC-563 Forms to be excessed, and 542 have been identified as "In Use/Future Use" items. The capital equipment disposition task is 96 % completed.

The task specific Health and Safety Plan for Safe Shutdown has been completed and approved.

The project to transfer the remaining 4A metal inventory from the FEMP to the Defense Consolidation Facility (DCF) in Snelling, South Carolina, continued. The three rail cars that had been loaded with drummed material, which had been on hold since the June 17 lid-popping incident, have been unloaded. Two were loaded with other material and have been shipped, and the third is being reloaded. The FEMP has committed to an accelerated schedule to ship all DCF materials. Sixteen gondola cars have been shipped as of September 30 for a total of 900.3 metric tons uranium (MTU). The balance to be shipped is 1952.7 MTU (940.7 MTU to the DCF and 1012 MTU to Nevada Test Site).

Aerojet Ordnance reported orally that they are still interested in selected pieces of the derby breakout and slag milling systems, which have been on hold for them. A consultant with site expertise has been added to the Safe Shutdown staff to assist in dispositioning equipment and will be following up with Aerojet to ascertain their needs.

In an effort to reduce the risk hazards associated with work being performed in process buildings, the main natural gas lines are being physically disconnected and blanked off to each building.

Planned activities for October include distributing operational risk management procedures documentation to the task team, continuing the capital equipment disposition effort, continuing activities to transfer 4A metal from the site, continuing to pursue the release of the final draft of the RFPs, and issuing work orders to start utility isolation work.

RA No. 13, Plant 1 Ore Silos

The Plant 1 Ore Silos Removal Action will include the dismantling of the 14 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)

The bid opening for the subcontract for the silo dismantling was held August 6 and forwarded to DOE-FN for approval on August 18, 1992, and to DOE-OR on September 1. DOE-OR approval was received on September 9, 1992. The Construction Work Order was consequently issued to RUST. Mobilization of the contractor will begin in October.

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 20, 1994

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.

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 20, 1992. Responses were provided to the EPAs on June 23. The revised Work Plan was submitted to the EPAs on July 15, 1992. The Ohio EPA approved the Work Plan on July 29, 1992.

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

Based on results from the radiological walkover survey, the areas exceeding the field action level are more extensive than originally thought. Phase I was revised to be complete upon completion of the walkover survey and an additional commitment was made to complete initial hot spot excavations and additional sampling of the 100 pCi/g region identified by the walk-over survey, by October 30, 1992. The objective of the additional sampling is to provide more information on the depth of contamination in order to better evaluate additional potential soil excavations. These revisions were presented and agreed to at the monthly DOE-EPA Manager's Meeting on August 19, 1992.

A letter detailing preliminary results of the walk-over survey and options for soil excavation was submitted to the EPAs on August 28, 1992. Ohio EPA comments were received on September 10, 1992. Excavation activities began on September 9 and sampling began on September 21.

October activities will include the completion of the initial excavation and additional sampling (Phase II).

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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
Resubmit Revised Work Plan to the U. S. EPA	Completed July 15, 1992	July 15, 1992
Phase I - Completion of Off-Property Surface Soil Sampling and Radiological Walk-Over Survey	Completed August 4, 1992	August 18, 1992
Phase II - Complete initial excavation and additional sampling	Open, on schedule	October 30, 1992
Phase III - Submit total uranium analysis and proposed recommendation for potential off-property excavations	Open, on schedule	December 1, 1992
Phase IV - Submit Work Plan Addendum including Interim Report summarizing analytical results and revised RSE supporting potential future actions	Open, on schedule	April 30, 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 on site. This removal action will minimize 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.

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 20, 1992. Comment responses and revised Work Plan pages were provided to the EPAs on June 26, 1992. Draft U.S. EPA approval of the comment-responses was received on July 29.

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Period Ending September 30, 1992

RA No. 15, Scrap Metal Piles (continued)

The subcontractor's Removal Action Project Plan (RAPP) for Phase I was transmitted to the EPAs on August 24, 1992. October activities will include the revision of the RAPP pending receipt of EPA comments.

Phase IIA, containerization of scrap copper, was initiated on September 29, 1992. October activities will include the continued containerization of the scrap copper ingots.

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	Completed June 19, 1992	June 30, 1992
Phase I - Submit Subcontractor's Removal Action Project Plan	Completed August 24, 1992	September 30, 1992
Phase I - Complete	Open, on schedule	March 30, 1994
Phase IIA - Initiate Containerization	Completed September 29, 1992	September 30, 1992

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

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

The apparent low bidder has been confirmed. The consent request for the project was forwarded to DOE-OR on September 30, 1992.

Work in October will concentrate on additional sampling as part of the RCRA determination.

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Period Ending September 30, 1992

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

KEY MILESTONES	STATUS	DUE DATE
Submit Work Plan to the U.S. EPA	Completed March 2, 1992	March 2, 1992
Complete Removal Action	Open, on schedule	August 30, 1993

RA No. 17, Improved Storage of Soil and Debris

This removal action will include the management and appropriate storage of contaminated soil and debris on site. 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.

The draft Work Plan was transmitted to the EPAs on March 25, 1992. Draft comments indicating U.S. EPA disapproval of the Work Plan were received on July 29, 1992. August activities included comment resolutions and the resubmittal of the Work Plan to the EPAs on August 28, 1992.

September activities included continued design work. October activities will include review of the initial draft of the Environmental Assessment from the subcontractor and continuation of 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 July 29, 1992	April 24, 1992
Submit Revised Work Plan to the U.S. EPA	Completed August 28, 1992	August 28, 1992

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Period Ending September 30, 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. An Alternatives Evaluation identified the dredge method as the most viable means to transfer material within Pit 5.

Activities for September included U.S. EPA comment resolution of the Work Plan. The Request for Construction (RCA) for field activities was issued on September 10, 1992; the RCA for the dredge was issued on September 18, 1992; and substantive field work was initiated on September 24, 1992.

Planned activities for October include continuation of site preparation and the spraying down of the material. Also planned is the continued procurement of the dredging system and services.

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
Submit Revised Work Plan to Ohio and U.S. EPA	Approved August 17, 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.

WEMCO received for review the 50% Functional and Operational Requirements Document and the draft Removal Site Evaluation in September.

October activities will include review and revision of the aforementioned documents. A "dismantling sequence" meeting will be held in October.

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Period Ending September 30, 1992

RA No. 19, Plant 7 Dismantling (continued)

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 RA No. 12, Safe Shutdown, but is being accelerated as a separate expedited response.

Activities in September included neutralization of 36,300 gallons of uranyl nitrate solution. The neutralized slurry was filtered on the Plant 8 east Eimco filter and 60 drums of filter cake were produced.

October activities will include continuing processing material contained in Tank F1-26, which is expected to be completed by October 23, 1992. Additional activities will include an evaluation of the process by the WEMCO operational readiness review and DOE operational readiness evaluation teams.

KEY MILESTONES	STATUS	DUE DATE
System Integrity Testing	Completed February 13, 1992	February 13, 1992
Submit Flow Charts to the U.S. EPA	Completed April 8, 1992	March 31, 1992
Commence Processing Material	Achieved July 6, 1992	July 6, 1992
Finish Processing Material	Open	Schedule being developed

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Period Ending September 30, 1992

RA No. 21, Expedited Silo 3

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

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

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

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

Work in September included the shipment of waste to the Nevada Test Site. Work in October will include preparation of the removal action final report.

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.

Activities for September included the issuance of a letter to the U.S. EPA confirming the verbal agreement between the U.S. EPA and DOE to sow grass as a prerequisite for Work Plan approval. WEMCO received an Action Memorandum from the DOE to initiate work within six months.

Planned activities for October include initiating seeding (first field activity), and following site procedure for preparing the necessary documentation (e.g., Safety Assessment, Risk Assessment, NEPA documentation) as required.

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Period Ending September 30, 1992

RA No. 22, Waste Pit Area Containment Improvement (continued)

KEY MILESTONES	STATUS	DUE DATE
Submit Work Plan to the U.S. EPA	Completed August 31, 1992	August 31, 1992
Submit Revised Work Plan	Open, on schedule	November 5, 1992

RA No. 23, Inactive Flyash Pile

A field investigation was conducted to determine if select locations within the Inactive Flyash Pile and South Field Disposal area boundary (RA No. 8) would require material to be removed. On June 24, contaminated debris from three of the regulated areas identified in the survey report were collected and placed in interim controlled storage. The contaminated items collected were a plastic bag (approximately 1 gallon) containing soil, a 1 foot x 2 feet section of transite and two small pieces of yellow material. Results of the survey were submitted on June 29, 1992. As a result of removal of the debris, DOE-FN determined that no additional action is required until remediation.

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.

The Work Plan was submitted to the EPAs on July 24. U.S. EPA comments were received on August 27, 1992. September activities included resolution of RCRA issues and EPA Work Plan comments. October activities will include the submittal of the draft final Work Plan to the EPAs.

The second and third pump-outs occurred on September 2 and 29, resulting in the removal of approximately 175 and 135 gallons, respectively. A total of 505 gallons have been removed in three pumping operations. Pumping will continue on a monthly basis until the removal of the sump is initiated.

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Period Ending September 30, 1992

RA No. 24, Pilot Plant Sump (continued)

KEY MILESTONES	STATUS	DUE DATE
Submit Work Plan to the U.S. EPA	Completed July 24, 1992	July 31, 1992
Submit draft final Work Plan to the U.S. EPA	Open, on schedule	October 14, 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 application 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 gallons and measures approximately 10 feet wide x 40 feet long x 15 feet high. This unit operated from 1952 until about 1989. The 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 from the tank car followed by the tank car's decontamination and dispositioning.

August activities included the initial Work Plan and Removal Site Evaluation submittal to DOE on August 31, 1992. September activities included receipt of DOE comments on September 18 and the resolution of those comments. October activities will include the submittal of the Work Plan to the U.S. EPA.

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

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Period Ending September 30, 1992

RA No. 26, Asbestos Removals (Asbestos Program) (continued)

The Work Procedures Compendium for this Removal Action was submitted on May 19. U.S. EPA disapproval was received on July 10. Comment responses were submitted on July 28. August activities included the submittal of the comment responses and revised supporting documentation on August 10, 1992.

October activities will include 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
Update existing internal procedures to ensure that appropriate documentation is entered into the administrative record file	To be updated annually	June 30, 1993

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

This removal action calls for the submittal of the Engineering Evaluation/Cost Analysis (EE/CA) study to identify alternatives for managing contaminated structures; the documentation of 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 addressing health and environmental impacts associated with the proposed action.

August activities included document submittal for DOE-FN and DOE-HQ review on August 14, 1992. September activities included DOE comment resolutions. October activities will include revision of the EE/CA.

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 September 30, 1992

1.0 Operable Unit 1

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

1.1 Field Investigation

1.1.2 Radon Sampling Program

Scope:

The Radon Sampling Program was initiated to develop a representative measurement of radon releases from the waste pit area. The November 19, 1991, "Federal Facility Agreement for Control and Abatement of Radon-222 Emissions" currently requires radon flux measurements of Waste Pits 1, 2, 3, 4, and 5, and the Clearwell. 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.

Status:

The radon sampling is complete for Waste Pits 1, 2, and 3. A final report was issued to the U.S. EPA on June 25, 1992.

As a result of a discussion with the U.S. EPA on May 27, 1992, concerning the issue of sampling Pits 4 and 5 and the Clearwell, it was determined that Pit 4 will need to be sampled in addition to Pits 1, 2, and 3. Discussions between the DOE and the U.S. EPA resulted in an agreement to not sample the Clearwell at this time and that timely completion of the Pit 5 removal action (No. 18) will satisfy concerns of radon emissions from this pit.

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 Pits 4 and 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. Radon sampling for Pit 5 will not be conducted if the removal action to control emissions is completed as scheduled.

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Period Ending September 30, 1992

1.1.2 Radon Sampling Program (continued)

Corrective Actions:

Install Pit 4 radon flux measurement devices.

Obtain written approval from the U.S. EPA to modify the November 19, 1991, FFA-CARE and delete the requirement for sampling Pit 5 and the Clearwell.

1.1.3 Pits 5 and 6 and the Clearwell Sampling Program

Scope:

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

Status:

The sampling of Pits 5 and 6 and the Clearwell is complete. These samples were shipped to the analytical and treatability laboratory where characterization and stabilization testing is ongoing. Analytical data for characterization was received from Pits 5 and 6 but not the Clearwell.

Issues/Corrective Actions:

None to report.

1.2 Treatability Studies

Scope:

The Operable Unit 1 treatability studies will evaluate the two treatment process options identified in the Operable Unit 1 Initial Screening of Alternatives document: 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. Performance criteria including formulation ranges, compressive strength, leachability, bulking factor, and permeability will be investigated. Cement

1.2 Treatability Studies (continued)

stabilization binding agents are being evaluated including portland cement, flyash, Blast Furnace Slag, and sodium silicate. Clay (attapulgite and clinoptilolite) will be added to reduce the leachability of metals in the waste. Glass formers and modifiers considered for vitrification are flyash, soil, and sodium hydroxide.

The stabilization testing will consist of two phases. The preliminary phase consists of reagent range-finding experiments on a pit-by-pit basis using composite samples from individual waste pits. The advanced phase consists of testing on strata samples where available. Each phase contains two stages permitting additional reagent testing as necessary. An optional phase to evaluate waste form durability is also being considered.

Status:

Cementation preliminary phase Stage 2 testing was completed on August 27, 1992, with the receipt of the Burn Pit modified toxicity characteristics leaching procedure (MTCLP) results. Burn Pit and Clearwell MTCLP results were evaluated in early September 1992 and formulations were selected for advanced phase testing for all Operable Unit 1 waste pits. All other pits had acceptable UCS and MTCLP results.

All preliminary phase Stage 1 vitrification analyses consisting of the Nuclear Waste Glass Product Consistency Tests (PCT) and the MTCLP were completed and loaded into the treatability database on July 16, 1992. Data evaluation was completed on these results and it was concluded that acceptable glass was prepared for all pits.

Advanced phase Stage 1 molds for all waste pits on strata as specified in the approved work plan have been completed as of September 30, 1992, except for Waste Pit 2 Strata 3. Insufficient material quantities are available to prepare molds for this strata.

Advanced phase Stage 1 vitrification work is progressing. As of September 25, 1992, 35 of the 43 formulations were completed with only the Burn Pit and Clearwell yet to be finalized; however, significant variations in pit strata samples have resulted in severe damage to the platinum crucibles used for these melts. Procedure modifications have been implemented to minimize further crucible damage. Additional measures are being evaluated to minimize schedule impacts.

Issues:

Severe damage to the platinum crucibles used for vitrification melts occurred which may impact advanced phase Stage 1 completion schedules. Crucibles made from other alloys are under consideration.

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Period Ending September 30, 1992

1.2 Treatability Studies (continued)

Corrective Actions:

Revise melt procedures to minimize crucible damage and consider options to continue program including expeditious purchase of new crucibles.

1.3 Remedial Investigation

Scope:

An 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.

Initial activities scheduled for the RI are field data collection and analysis. The field data analysis will evaluate the preliminary data available from field measurements while awaiting results of lab analysis.

Status:

Data validation for Operable Unit 1 was completed during September. Validation qualifiers are currently being entered into the database. An independent peer review of the validation results was completed during September. The findings of the review are being resolved, with an anticipated completion in early October.

Potentiometric cross-sections of the waste pit area have been prepared to establish the hydraulic relationship between the perched water and the water in the waste pits.

Issues:

As a result of a recent inspection of seven Operable Unit 1 monitoring wells, it was observed that staining and minor water leakage are occurring. The wells were installed in 1985. As a result of the potential leakage, the well casings will be removed, the borings plugged, and abandoned.

Corrective Actions:

None to report.

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1.3 Remedial Investigation (continued)

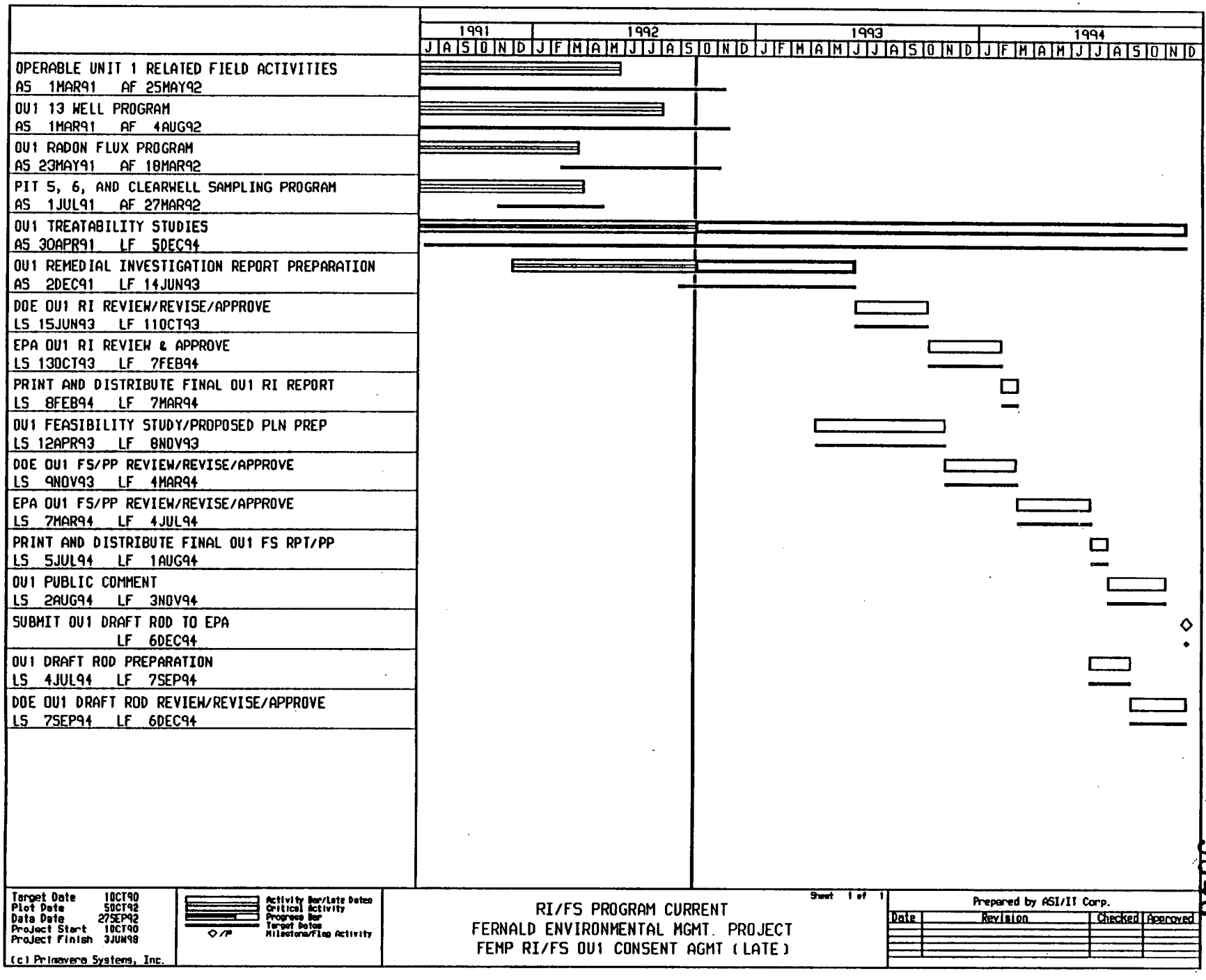
OU 1 REMEDIAL INVESTIGATION REPORT **PRIMARY**

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	12/11/93 C	01/10/94 C

C = Consent Agreement Date

1.4 Planned Activities for October 1992

- Continue work on the advanced phase Stage 1 treatability experiments while completing preparation of advanced phase Stage 1 stabilization molds.
- Implement vitrification treatability testing procedure modifications and take other steps as necessary to complete Advanced Phase Stage 1 melts.
- Complete radiological analysis of Pits 5 and 6 and Clearwell samples and chemical analysis of Clearwell samples.


1991
1992
1993
1994
J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
OPERABLE UNIT 1 RELATED FIELD ACTIVITIES
AS 1MAR91 AF 25MAY92
OU1 13 WELL PROGRAM
AS 1MAR91 AF 4AUG92
OU1 RADON FLUX PROGRAM
AS 23MAY91 AF 18MAR92
PIT 5, 6, AND CLEARWELL SAMPLING PROGRAM
AS 1JUL91 AF 27MAR92
OU1 TREATABILITY STUDIES
AS 30APR91 LF 5DEC94
OU1 REMEDIAL INVESTIGATION REPORT PREPARATION
AS 2DEC91 LF 14JUN93
DOE OU1 RI REVIEW/REVISE/APPROVE
LS 15JUN93 LF 110CT93
EPA OU1 RI REVIEW & APPROVE
LS 130CT93 LF 7FEB94
PRINT AND DISTRIBUTE FINAL OU1 RI REPORT
LS 8FEB94 LF 7MAR94
OU1 FEASIBILITY STUDY/PROPOSED PLN PREP
LS 12APR93 LF 8NOV93
DOE OU1 FS/PP REVIEW/REVISE/APPROVE
LS 9NOV93 LF 4MAR94
EPA OU1 FS/PP REVIEW/REVISE/APPROVE
LS 7MAR94 LF 4JUL94
PRINT AND DISTRIBUTE FINAL OU1 FS RPT/PP
LS 5JUL94 LF 1AUG94
OU1 PUBLIC COMMENT
LS 2AUG94 LF 3NOV94
SUBMIT OU1 DRAFT ROD TO EPA
LF 6DEC94
OU1 DRAFT ROD PREPARATION
LS 4JUL94 LF 7SEP94
DOE OU1 DRAFT ROD REVIEW/REVISE/APPROVE
LS 7SEP94 LF 6DEC94
Target Date 10CT90
Plot Date 50CT92
Data Date 27SEP92
Project Start 10CT90
Project Finish 3JUN98
(c) Primavera Systems, Inc.
Activity Bar/Late Dates
Critical Activity
Progress Bar
Target Dates
Milestone/Flag Activity
Sheet 1 of 1
RI/FS PROGRAM CURRENT
FERNALD ENVIRONMENTAL MGMT. PROJECT
FEMP RI/FS OU1 CONSENT AGMT (LATE)
Prepared by ASI/IT Corp.
Date
Revision
Checked
Approved

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Period Ending September 30, 1992

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 Work Plan Addendum - Installation of Monitoring Well 1433

Scope:

The Work Plan Addendum provides for installation of Monitoring Well 1433 in the northwest area of the South Field, near Boring 1401. This is desirable to further characterize the fill/soil material by sampling any perched groundwater/leachate that may be present at that location and was not previously encountered.

Status:

Monitoring Well 1433 was installed on July 29, 1992. No groundwater was encountered. The casing at Well 1433 will be removed with the boring, plugged and abandoned.

Issues/Corrective Actions:

Very little groundwater was encountered during the installation of Monitoring Well 1433. Development and sampling activities were not performed due to insufficient quantities of groundwater. Plans were developed and completed in September 1992 to plug and abandon Monitoring Well 1433. Field activities for plugging and abandoning Monitoring Well 1433 will commence in October 1992.

2.2 Treatability Studies

Scope:

This study supports the FS and subsequent remedy selection for Operable Unit 2. The study will demonstrate whether waste stabilization achieves the desired level of material strength and will provide quantitative leaching data for geochemical and computer modeling of groundwater contaminant transport. The study is composed of two parts: two preliminary phases (to support remedy screening) and an advanced phase (to support

2.2 Treatability Studies (continued)

remedy selection). The preliminary phase involves evaluating a range of stabilization mix formulations to determine a representative formulation which meets the desired strength criteria. The advanced phase involves performing tests on stabilized waste using representative formulations determined in the preliminary phases.

Status:

A Treatability Report Comment Response document was submitted to U.S. EPA on September 21, 1992. In a letter received on September 21, 1992, the Ohio EPA provided comments on the Treatability Study Report.

Issues/Corrective Actions:

Comment responses will be prepared and submitted to the Ohio EPA in October 1992.

2.3 Remedial Investigation

The RI provides a summary of the field investigations and supports 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.

Status:

The revised RI Report was submitted to DOE-HQ on August 14, 1992. DOE-HQ comments were received on September 15, 1992. A comment resolution meeting was held on September 21, 1992. The draft RI Report is expected to be submitted to U.S. EPA in October 1992.

Issues:

The August 14, 1992, revised RI Report identified chemicals of concern based on regional background data. FEMP site-specific background data has recently become available, but not in time for incorporation in this internal draft of the RI Report. Preliminary review of the new site specific background data indicates that some new chemicals of concern must be evaluated and included in the next version of the RI report. The analysis, including required updates to the baseline risk assessment, will be included in the first draft submittal to the U.S. EPA and Ohio EPA.

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Period Ending September 30, 1992

2.3 Remedial Investigation (continued)

Corrective Action:

Incorporate new chemicals of concern into the draft RI report.

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	12/17/92 C	01/14/93 C

C = Consent Agreement Date

2.4 Feasibility Study

The FS evaluates 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:

Cost estimates for the Operable Unit 2 alternatives were completed in mid-September 1992. The first drafts of Section 1 (Introduction and Background), Section 2 (Identification and Screening of Technologies and Process Options), and Section 3 (Development and Screening of Alternatives) were completed on September 18, 1992. Section 4 (Detailed Analysis of Alternatives) was initiated in September 1992. Fate and transport modeling and evaluation of exposure/risk/toxicity for the FS risk assessment were completed in September 1992, and internal sections of the RA appendix were initiated.

Issues:

The FS schedule continues to be very tight with no float available.

Corrective Actions:

Additional personnel have been used on the FS in conjunction with many parallel activities for completing the first draft FS Report.

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Period Ending September 30, 1992

2.4 Feasibility Study (continued)

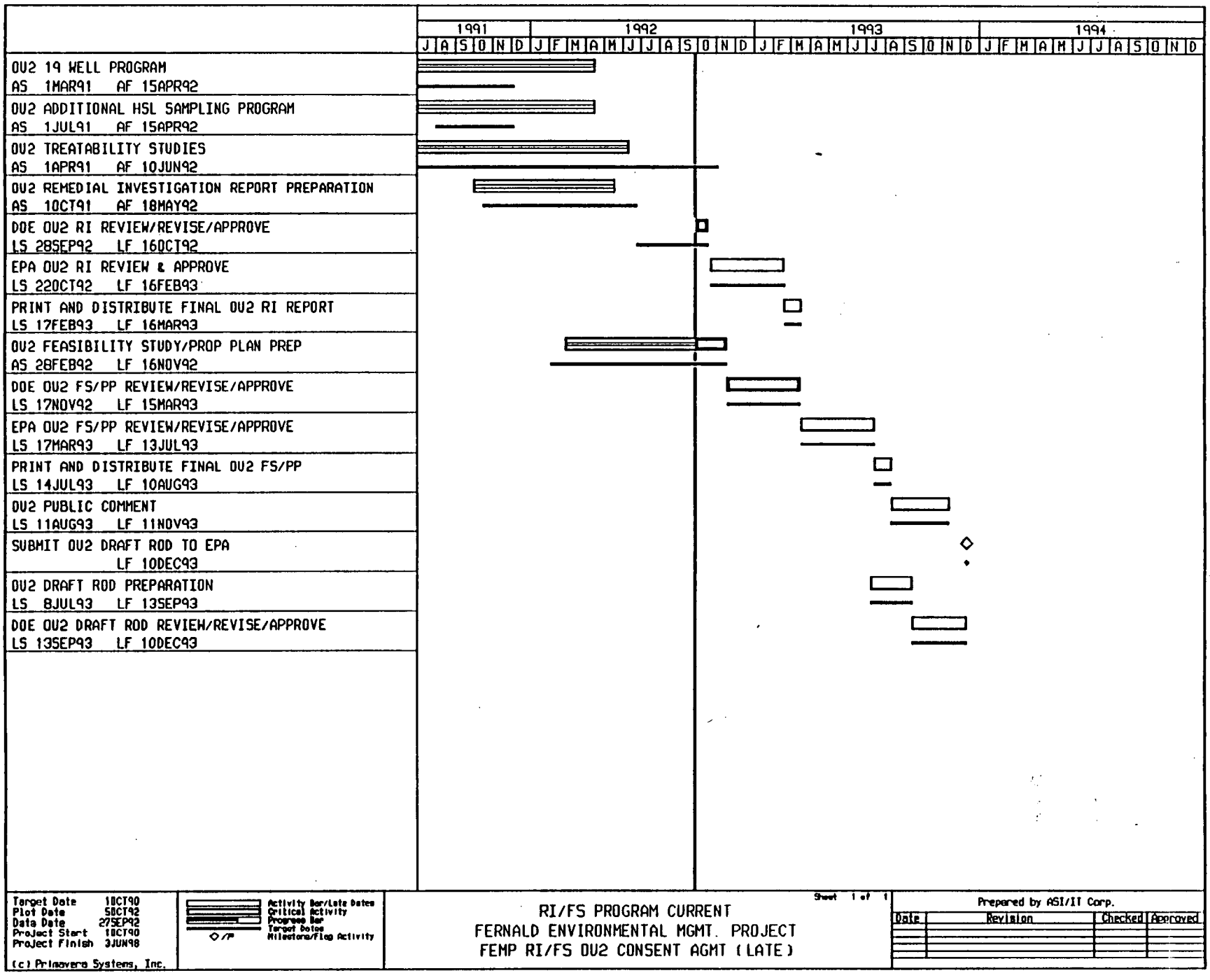
OU 2 FEASIBILITY STUDY REPORT **PRIMARY**

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	05/13/93 C	06/13/93 C

C = Consent Agreement Date

2.5 Planned Activities for October 1992

- Incorporate DOE-HQ comments into the RI Report and submit to DOE-FN on October 14, 1992, for transmittal to U.S. EPA/Ohio EPA.
- Complete first draft of Section 4 of the FS Report.
- Complete evaluation of exposures during remediation for the Operable Unit 2 Detailed Analysis of alternatives.
- Complete Operable Unit 2 FS RA Appendix.
- Complete the plugging and abandonment of Monitoring Well 1433.
- Review Ohio EPA comments on the Treatability Study Report and prepare comment responses for submission to Ohio EPA.
- Initiate comment implementation into an addendum or supplement to the report, if U.S. EPA transmits their review comments/approval of the Treatability Study Report.


1991
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J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
OU2 19 WELL PROGRAM
AS 1MAR91 AF 15APR92
OU2 ADDITIONAL HSL SAMPLING PROGRAM
AS 1JUL91 AF 15APR92
OU2 TREATABILITY STUDIES
AS 1APR91 AF 10JUN92
OU2 REMEDIAL INVESTIGATION REPORT PREPARATION
AS 10CT91 AF 18MAY92
DOE OU2 RI REVIEW/REVISE/APPROVE
LS 28SEP92 LF 16OCT92
EPA OU2 RI REVIEW & APPROVE
LS 22OCT92 LF 16FEB93
PRINT AND DISTRIBUTE FINAL OU2 RI REPORT
LS 17FEB93 LF 16MAR93
OU2 FEASIBILITY STUDY/PROP PLAN PREP
AS 28FEB92 LF 16NOV92
DOE OU2 FS/PP REVIEW/REVISE/APPROVE
LS 17NOV92 LF 15MAR93
EPA OU2 FS/PP REVIEW/REVISE/APPROVE
LS 17MAR93 LF 13JUL93
PRINT AND DISTRIBUTE FINAL OU2 FS/PP
LS 14JUL93 LF 10AUG93
OU2 PUBLIC COMMENT
LS 11AUG93 LF 11NOV93
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
Target Date 10CT90
Plot Date 5OCT92
Data Date 27SEP92
Project Start 10CT90
Project Finish 3JUN98
(c) Primavera Systems, Inc.
Activity Bar/Late Dates
Critical Activity
Progress Bar
Target Dates
Milestone/Flag Activity
Sheet 1 of 1
RI/FS PROGRAM CURRENT
FERNALD ENVIRONMENTAL MGMT. PROJECT
FEMP RI/FS OU2 CONSENT AGMT (LATE)
Prepared by ASI/IT Corp.
Date
Revision
Checked
Approved

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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 September 1992 included continued development of procedures covering required field instrument surveys and laboratory analyses, work plan revisions due to comments, and completion of a partial draft chapter for the Operable Unit 3 initial screening of alternatives (ISA). This draft includes the initial identification and screening of decontamination/dismantlement technologies applicable to Operable Unit 3.

In response, in part, to comments received from U.S. EPA on the June 2, 1992, Draft OU3 RI/FS Work Plan Addendum, data needs were re-evaluated and a revised approach to data collection for the OU3 RI/FS was developed. This revised approach was submitted to U.S. EPA in draft on September 15, 1992, with the documentation detailing data needs, the revised approach to data collection based on these needs, and revised protocols. This document also presented example component-specific information which will be added to the Sampling and Analysis Plan. An extensive effort was also initiated to compile this component-specific information.

OU 3 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.	08/04/92 A	TBD

C = Consent Agreement Date A = Actual

3.2 Issues/Corrective Actions

None to report.

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3.3 Planned Activities for October 1992

- Complete development of field instrument survey and laboratory analytical procedures.
- Begin validation of Operable Unit 3 analytical procedures in accordance with the Sitewide CERCLA Quality Assurance Project Plan.
- Continue development of the Operable Unit 3 ISA chapter on identification and screening of technologies.

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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 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 activities associated with this program have been completed. The status of this program will no longer be reported.

Issues/Corrective Actions:

4.1.2 Sampling West of K-65 Silos 1 and 2

Scope:

This investigation is to further define the western (downgradient) extent of contamination in the water bearing zone(s) within the glacial overburden underlying the K-65 area. Two wells will target the main perched water bearing zone west of Silos 1 and 2. One well or lysimeter will target the area below the main perched water zone, at a location downgradient of the decant tank. Three lysimeters will be installed in the east bank of Paddy's Run.

Status:

The first draft of the Work Plan Addendum, budget, and schedule for this task are being prepared. A draft package is expected to be transmitted in October 1992.

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4.1.2 Sampling West of K-65 Silos 1 and 2 (continued)

Issues/Corrective Actions:

Data from this task will be used in the Operable Unit 5 RI; therefore, receipt of the validated data set must be received in a timely fashion. Corrective actions to provide the validated data in time for the Baseline Risk Assessment and RI have not been formulated.

4.2 Treatability Studies

Scope:

The Treatability Study Work Plan provides additional information to support the FS and subsequent remedy selection for Operable Unit 4. There are two separate treatability 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 treatability study considers the vitrification of Silos 1, 2, and 3 material.

The Treatability Study Work Plan (for cementation and chemical extraction) will demonstrate whether stabilization achieves a desired level of material strength, provide information to help determine the effectiveness of chemical extraction, and provide data for use in fate and transport modeling. The study is composed of three preliminary phases and an advanced phase. The preliminary phases 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, radon emanation rate from the vitrified waste, and the leachability of the vitrified waste.

Status:

Stabilization Experiments - Silos 1, 2, and 3 advanced phase analyses were completed on August 28, 1992, and data validation is in progress.

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4.2 Treatability Studies (continued)

Chemical Extraction tests - Toxicity Characteristics Leaching Procedure (TCLP) analyses on leachate from chemically extracted solids is complete and data validation is in progress. Vitrification of the liquid resulting from the chemical extraction process is also complete and PCT analyses is in progress. Chemical extraction experiments are now in progress to gather additional information on the effects of time, temperature, and washing agents.

Vitrification Treatability Tests - The 100 g test melts on sequences A - D are complete and TCLP extractions were initiated in late September 1992. Measurement of radon emanation from the vitrified waste is complete. PCT extractions are currently in progress.

Issues:

TCLP analytical results from the chemically extracted solids are expected on September 10, 1992, due to reruns for lead and other radioactive constituents. This could result in a schedule delay if analytical results from the stabilization program are also received late.

Corrective Actions:

Closely monitor receipt of analytical results received from the stabilization program and vitrification program. Also, request, evaluate, and validate partial analytical data packages as necessary to minimize schedule slippage.

4.3 Remedial Investigation Report

Scope:

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

Status:

Validated data for Operable Unit 4 received to date are being interpreted. The baseline risk assessment and fate and transport calculations are ongoing for Silo 3 and have been initiated for Silos 1 and 2.

4.3 Remedial Investigation Report (continued)

The RI is in final stages of preparation. Several chapters are ready for internal review. The baseline risk assessment is ongoing. The RI is on schedule for delivery to WEMCO/DOE on October 19, 1992.

Issues:

Delays in completion of data validation and database entry have delayed evaluation of the RI data. No impact to the Consent Agreement delivery date for the RI is anticipated as reported in the August 1992 monthly report.

Corrective Action:

A recovery plan was initiated to ensure that the RI will be completed and delivered to the U.S. EPA per Consent Agreement dates.

OU 4 REMEDIAL INVESTIGATION REPORT **PRIMARY**

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

C = Consent Agreement Date

Ongoing activities include initiation of internal reviews of the RI and continuation of fate and transport calculations.

4.4 Feasibility Study

Scope:

The FS evaluates 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.

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4.4 Feasibility Study (continued)

Status:

The revision of alternatives described in the U.S. EPA-approved ISA proceeded during July 1992 at the direction of DOE-FN and is designed to provide separate alternatives for the different waste media. For example, alternatives to disposition Silos 1 and 2 contents are being created, alternatives for Silo 3 contents only are being revised, silo structures, berms and subsoils are being grouped in another set of alternatives, and Silo 4 is being dispositioned in separate alternatives. Disposal options and locations, both on property and off site, were discussed with WEMCO and DOE-FN during August 1992 and are being included as appropriate to the alternatives. Alternative description revisions are ongoing.

Issues/Corrective Actions:

None to report.

OU 4 FEASIBILITY STUDY **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.	09/09/93 C	11/10/93 C	12/09/93 C

C = Consent Agreement Date

4.5 Planned Activities for October 1992

- Issue first draft of the RI Report and Baseline Risk Assessment to WEMCO/DOE on October 19, 1992.
- Continue revision of FS alternatives descriptions and initiate fate and transport modeling for the FS.
- Complete data validation of analytical results from cement stabilization and chemical extraction advanced phase experiments.
- Complete analyses of stabilized precipitated material and vitrified liquid from the chemical extraction experiments.

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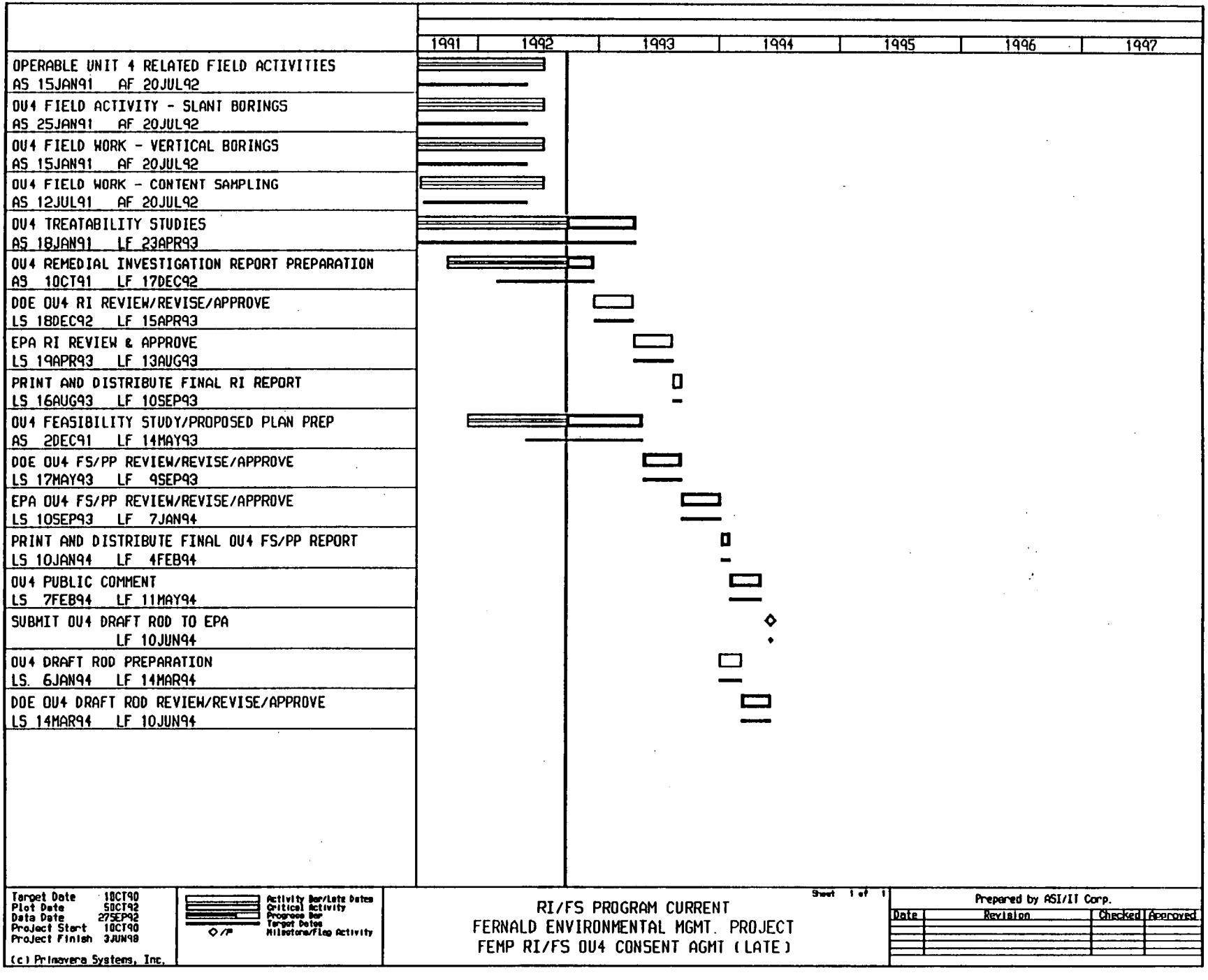
4.5 Planned Activities for October 1992 (continued)

- Continue with TCLP analyses of vitrified material leachate.
- Initiate PCT analyses of vitrified material leachate.


1991
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1997
OPERABLE UNIT 4 RELATED FIELD ACTIVITIES
AS 15JAN91 AF 20JUL92
OU4 FIELD ACTIVITY - SLANT BORINGS
AS 25JAN91 AF 20JUL92
OU4 FIELD WORK - VERTICAL BORINGS
AS 15JAN91 AF 20JUL92
OU4 FIELD WORK - CONTENT SAMPLING
AS 12JUL91 AF 20JUL92
OU4 TREATABILITY STUDIES
AS 18JAN91 LF 23APR93
OU4 REMEDIAL INVESTIGATION REPORT PREPARATION
AS 10CT91 LF 17DEC92
DOE OU4 RI REVIEW/REVISE/APPROVE
LS 18DEC92 LF 15APR93
EPA RI REVIEW & APPROVE
LS 19APR93 LF 13AUG93
PRINT AND DISTRIBUTE FINAL RI REPORT
LS 16AUG93 LF 10SEP93
OU4 FEASIBILITY STUDY/PROPOSED PLAN PREP
AS 2DEC91 LF 14MAY93
DOE OU4 FS/PP REVIEW/REVISE/APPROVE
LS 17MAY93 LF 9SEP93
EPA OU4 FS/PP REVIEW/REVISE/APPROVE
LS 10SEP93 LF 7JAN94
PRINT AND DISTRIBUTE FINAL OU4 FS/PP REPORT
LS 10JAN94 LF 4FEB94
OU4 PUBLIC COMMENT
LS 7FEB94 LF 11MAY94
SUBMIT OU4 DRAFT ROD TO EPA
LF 10JUN94
OU4 DRAFT ROD PREPARATION
LS 6JAN94 LF 14MAR94
DOE OU4 DRAFT ROD REVIEW/REVISE/APPROVE
LS 14MAR94 LF 10JUN94
Target Date 18CT90
Plot Date 50CT92
Data Date 27SEP92
Project Start 10CT90
Project Finish 3JUN98
(c) Primavera Systems, Inc.
Activity Bar/Late Dates
Critical Activity
Progress Bar
Target Dates
Milestone/Flag Activity
Sheet 1 of 1
RI/FS PROGRAM CURRENT
FERNALD ENVIRONMENTAL MGMT. PROJECT
FEMP RI/FS OU4 CONSENT AGMT (LATE)
Prepared by ASI/IT Corp.
Date
Revision
Checked
Approved

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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 Operable Unit 5 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 the Clearwell Line.

Status:

Resolutions to the comments received from the Ohio EPA and the U.S. EPA were completed. Resolutions to the comments are currently being incorporated into the addenda. The revised comments and Work Plan will be transmitted to the Ohio EPA and the U.S. EPA by November 1, 1992.

Field characterization of the K-65 Slurry and Clearwell Line continued according to the Work Plan. Currently, groundwater samples from 10 existing wells (1150, 1154, 1167, 1206, 1207, 1208, 1213, 1215, 1226, 1237) are being analyzed for HSL volatiles, general water quality, and full radiological parameters.

The second round of groundwater sampling for HSL volatiles, general water quality, and full radiological parameters was initiated in September 1992 for the 10 existing wells.

Nine new wells were installed according to the current Work Plan for this task and their status is as follows:

- 1836 Installation completed. Well development and first round of groundwater sampling completed.
- 1837 Installation completed. Well development and first round of groundwater sampling completed.

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5.1.1 Operable Unit 5 Work Plan Addenda (Formally Auger and Cable Tool Sampling Program) (continued)

- 1838 Installation completed. Well development and first round of groundwater sampling completed.
- 1839 Installation completed. Well development and first round of groundwater sampling completed.
- 1840 Installation completed. Well development and first round of groundwater sampling completed.
- 1841 Boring complete. Well not installed due to the fact that groundwater was not encountered at this location
- 1842 Installation completed. Well installed but not producing sufficient groundwater samples.
- 1843 Installation completed. Well development and first round of groundwater sampling completed.
- 1844 Installation completed. Well development and first round of groundwater sampling completed.

Issues/Corrective Action:

A variance was written and approved for the reinstallation of Monitoring Well 1842 which was installed approximately 1.5 feet above the existing transfer line. The reason for this variance is that the Work Plan requirements mandated the boring be terminated at the base of the first perched water bearing unit. Well 1842 will be reinstalled at a lower elevation in order to adequately characterize the soils beneath the transfer line per the Work Plan.

5.1.2 Outfall Line Investigation

Scope:

This Work Plan Addendum defines the sampling and analysis required to investigate potential leakage from the outfall line as part of the Operable Unit 5 RI. The installation of Monitoring Well 2119 and subsequent sampling program was based upon data from water samples collected from Well 2067.

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5.1.2 Outfall Line Investigation (continued)

If groundwater contamination has occurred due to a failure in the pipeline between Manhole 179 and 180, then a previously unidentified occurrence of contamination in groundwater may exist beyond the FEMP eastern boundary. Uranium contamination is present in groundwater samples at Well 2067. The installation of Well 2119 will determine if there is groundwater contamination associated with the pipeline failure between Manholes 179 and 180. If an off-FEMP plume is identified, then additional investigation may be required to determine the vertical and lateral extent of the plume.

Status:

Installation of Monitoring Well 2119 was scheduled to commence in September 1992 but was delayed due to failure to secure the necessary landowner access agreement. (The owner signed the agreement, but DOE Realty did not approve the agreement in September.)

Issues/Corrective Actions:

The current construction and excavation activities associated with the replacement of the outfall line will require that a new location be determined for Monitoring Well 2119. Field investigations on the potential relocation and the impacts are currently being reviewed. The likely relocation will require an access agreement with another landowner.

The installation of Monitoring Well 2119 is scheduled to begin in November 1992.

5.1.3 Magnetic Anomalies Trenching

Scope:

This Work Plan Addendum defines the additional field activities required for the characterization of the northeast area of the FEMP for the Operable Unit 5 RI/FS. Geophysical surveys conducted in the northeast area during the fall of 1989 and in the area immediately to the south during the summer of 1990, identified magnetic anomalies north of the road and in the fire training area. Excavation is necessary to characterize the areas of the magnetic anomalies, the stratigraphy of the anomalous area, and perched groundwater which may be present. The additional activities are necessary to provide adequate information for assessment and potential remedial design.

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5.1.3 Magnetic Anomalies Trenching (continued)

Issues/Corrective Actions:

The field investigation and earth work was completed in August 1992 on three of the seven magnetic anomaly locations identified in the Work Plan. The following trenches were completed:

Trench No. 1 N 482,253/E 1,381,803
Trench No. 2 N 482,286/E 1,382,048
Trench No. 3 N 482,718/E 1,381,932

Trench 1 and 2 revealed nothing more than what appears to be undisturbed soil and subsoil horizons at the trench excavations. Trench No. 3 yielded construction debris consisting of pieces of stainless and carbon steel scrap metals and one paint can lid. No radiological readings above background levels were detected and no measurable HNu readings were observed. Trenches 1, 2, and 3 were all advanced to a depth of approximately 18 feet. Minor trenching activities also took place in the first foot of top soil of Trench 4 at location N 482,720/E 1,381,872. No man-made objects were discovered.

Status:

The consensus regarding the current findings is that the geophysical techniques used to identify the anomalies were merely picking up natural interference which is giving a false positive indication that a buried manmade feature(s) exists. Valid concerns questioning the justification for continuing the trenching investigation were raised. Based upon field investigation findings, further trenching efforts were terminated because a majority of the magnetic anomalies appeared to be the result of the geophysical techniques used during the survey which were affected by natural phenomena, such as a concentration of iron oxide mineralization or a density difference between a clay horizon and strata of a different type. However, man-made buried ferrometallic objects (construction debris) were discovered in one of the trenches.

This activity is complete and will not be updated in future reports.

5.1.4 Installation of Monitoring Well at Location 0166

Scope:

This work plan addendum will provide a vertical profile of uranium concentration data for the water column upgradient of Homeowner Well 13, and a monitoring location at the vertical depth with the maximum measurable uranium concentration.

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5.1.4 Installation of Monitoring Well at Location 0166 (continued)

Homeowner well groundwater sampling has detected an increase in total uranium in water pumped from Homeowner Well 13 (total uranium approximately 33 µg/L). Homeowner Well 13 is completed approximately 20 feet beneath the water table contact. Monitoring Well 2398 indicate total uranium concentrations of 1.4 µg/L and 3.7 µg/L at the water table contact. A vertical profile of uranium concentration upgradient of Homeowner Well 13 is needed to determine at what level beneath the water table contact uranium concentrations are the greatest.

The groundwater sampling of Location 0166 will provide vertical profile of uranium concentrations at a location that is upgradient to the affected homeowner well. It will also provide a sampling point at the depth where the highest concentration of total uranium is detected.

Status:

A revision to the RI/FS Operable Unit 5 Work Plan Addenda was completed and approved. Field investigation and installation of the monitoring well at location 0166 has begun.

Issues/Corrective Actions:

None to report.

5.2 Treatability Study

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 separation/chemical extraction process that initially involves the separation of a soil into different particle-size fractions. Reagent formulas 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

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5.2 Treatability Study (continued)

separated from the wash stream into a concentrated residue for further treatment. The study consists of two phases: 1) remedy screening stages 1 and 2, involving laboratory and bench-scale tests and 2) remedy selection using pilot-scale equipment. Soils from four different areas will be used in these investigations. These soils come from the following areas: incinerator area (ID-A), Plant 1 pad area (ID-B), maintenance building area (OU5-A), and either the fire training area or underground storage tank soil piles (OU5-B).

Status:

DOE-FN received a letter from U.S. EPA dated June 22, 1992, agreeing with the revised comment responses to the work plan. These responses have been incorporated into the final Treatability Study Work Plan which was distributed on August 4, 1992. As of September 30, 1992, U.S. EPA had not responded to the document submittal.

Evaluation of remedy screening Stage 1 testing of ID-A and ID-B soils was completed. Remedy screening Stage 2 testing of ID-A and ID-B soils was initiated. Homogeneity tests on OU5-A soil were completed and results are satisfactory. The drums containing OU5-A soils were sampled in early September 1992 and initial characterization completed. Pilot plant design continued in September 1992 and preparation of the safety assessment has been initiated in support of remedy selection.

Issues/Corrective Actions:

None to report.

5.3 Initial Screening of Alternatives

Scope:

The ISA Report documents 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.

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5.3 Initial Screening of Alternatives (continued)

Status:

Internal comments on the ISA Report were received and are being reviewed for disposition. A draft copy for the U.S. EPA is scheduled to be completed in November 1992. Document preparation is proceeding ahead of the Consent Agreement schedule.

Issues/Corrective Actions:

None to report.

OU 5 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	06/15/93 C	07/15/93 C

C = Consent Agreement Date

5.4 Remedial Investigation

The Remedial Investigation (RI) data compilation has started. All data sources to be included in the RI will be identified and summarized. The geologic information continued in the RI/FS project files and documents will be compiled, evaluated, and updated. Existing maps and cross sections will be updated where additional information has become available.

Scope:

This task has recently started.

Issues/Correction Actions:

None to report.

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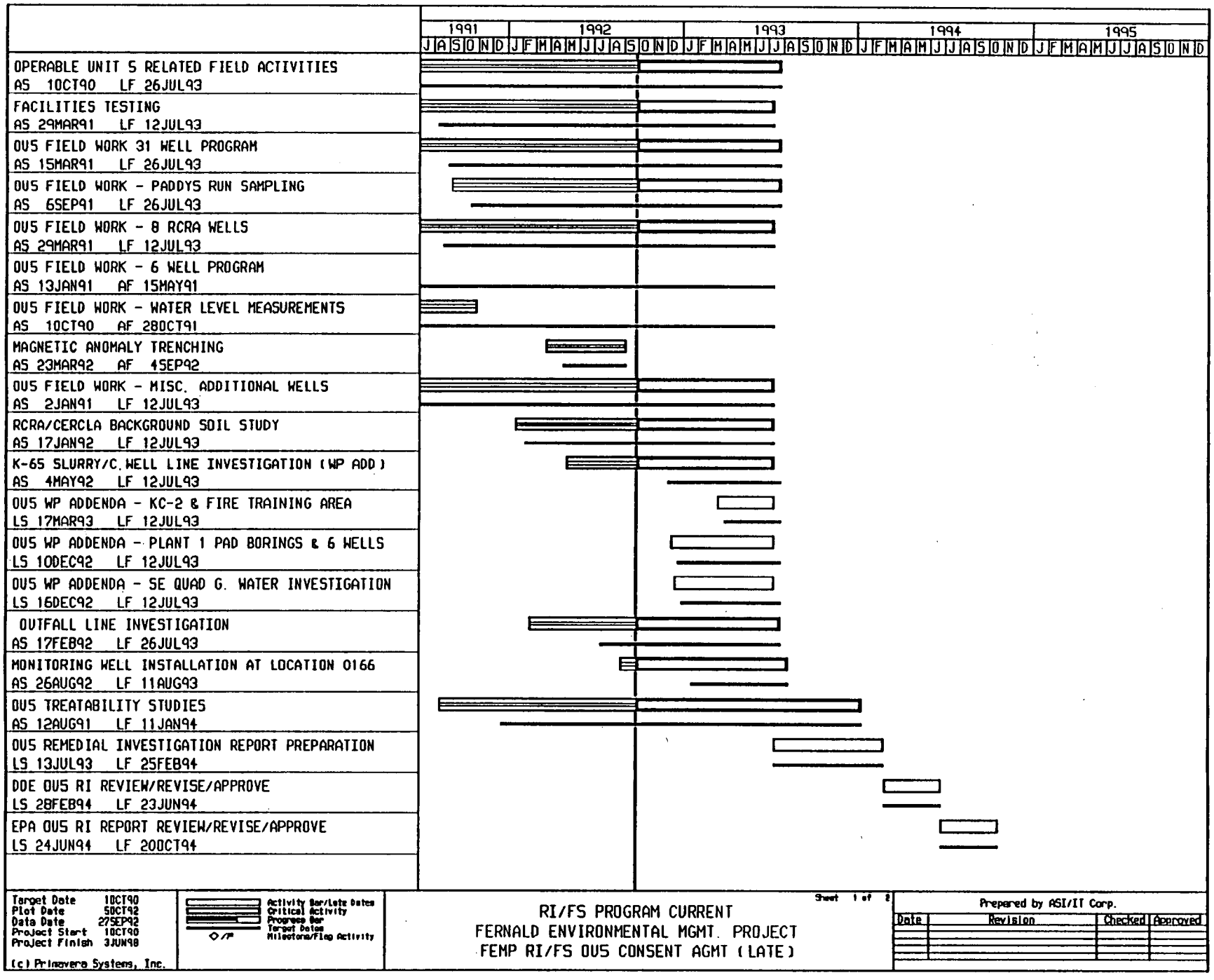
5.5 Planned Activities for October 1992

- Sample and initially characterize OU5-B soils.
- Continue remedy screening Stage 1 tests on OU5-A soils.
- Continue remedy screening Stage 2 tests on ID soils.
- Continue work on the remedy screening pilot test program by preparing required design, permitting, and procedural documents.
- Complete the revision of the Operable Unit 5 Work Plan Addenda by incorporating the resolutions to the comments received from the regulators. Upon completion of the revision of the Work Plan, commence immediate mobilization of field crews to begin sampling activities associated with the KC-2 warehouse, fire training area and the southeast quadrant.
- Complete the second round of groundwater sampling at Wells 1150, 1154, 1167, 1206, 1207, 1208, 1213, 1215, 1226, and 1237.
- Complete the reinstallation of Monitoring Well 1842.
- Mobilize field crews and initiate subsequent field investigation activities for Monitoring Well 2119 upon determination of the new location for MW-2119.
- Complete the installation of the monitoring well at location 0166.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OPERABLE UNIT 5 RELATED FIELD ACTIVITIES
AS 10CT90 LF 26JUL93
FACILITIES TESTING
AS 29MAR91 LF 12JUL93
OU5 FIELD WORK 31 WELL PROGRAM
AS 15MAR91 LF 26JUL93
OU5 FIELD WORK - PADDYS RUN SAMPLING
AS 6SEP91 LF 26JUL93
OU5 FIELD WORK - 8 RCRA WELLS
AS 29MAR91 LF 12JUL93
OU5 FIELD WORK - 6 WELL PROGRAM
AS 13JAN91 AF 15MAY91
OU5 FIELD WORK - WATER LEVEL MEASUREMENTS
AS 10CT90 AF 28OCT91
MAGNETIC ANOMALY TRENCHING
AS 23MAR92 AF 45EP92
OU5 FIELD WORK - MISC. ADDITIONAL WELLS
AS 2JAN91 LF 12JUL93
RCRA/CERCLA BACKGROUND SOIL STUDY
AS 17JAN92 LF 12JUL93
K-65 SLURRY/C.WELL LINE INVESTIGATION (WP ADD)
AS 4MAY92 LF 12JUL93
OU5 WP ADDENDA - KC-2 & FIRE TRAINING AREA
LS 17MAR93 LF 12JUL93
OU5 WP ADDENDA - PLANT 1 PAD BORINGS & 6 WELLS
LS 10DEC92 LF 12JUL93
OU5 WP ADDENDA - SE QUAD G. WATER INVESTIGATION
LS 16DEC92 LF 12JUL93
OUTFALL LINE INVESTIGATION
AS 17FEB92 LF 26JUL93
MONITORING WELL INSTALLATION AT LOCATION 0166
AS 26AUG92 LF 11AUG93
OU5 TREATABILITY STUDIES
AS 12AUG91 LF 11JAN94
OU5 REMEDIAL INVESTIGATION REPORT PREPARATION
LS 13JUL93 LF 25FEB94
DOE OU5 RI REVIEW/REVISE/APPROVE
LS 28FEB94 LF 23JUN94
EPA OU5 RI REPORT REVIEW/REVISE/APPROVE
LS 24JUN94 LF 20OCT94
Target Date 10CT90
Plot Date 50CT92
Data Date 27SEP92
Project Start 10CT90
Project Finish 3JUN98
(c) Primavera Systems, Inc.
Activity Bar/Late Dates
Critical Activity
Progress Bar
Target Dates
Milestone/Flag Activity
Sheet 1 of 2
RI/FS PROGRAM CURRENT
FERNALD ENVIRONMENTAL MGMT. PROJECT
FEMP RI/FS OU5 CONSENT AGMT (LATE)
Prepared by ASI/IT Corp.
Date
Revision
Checked
Approved

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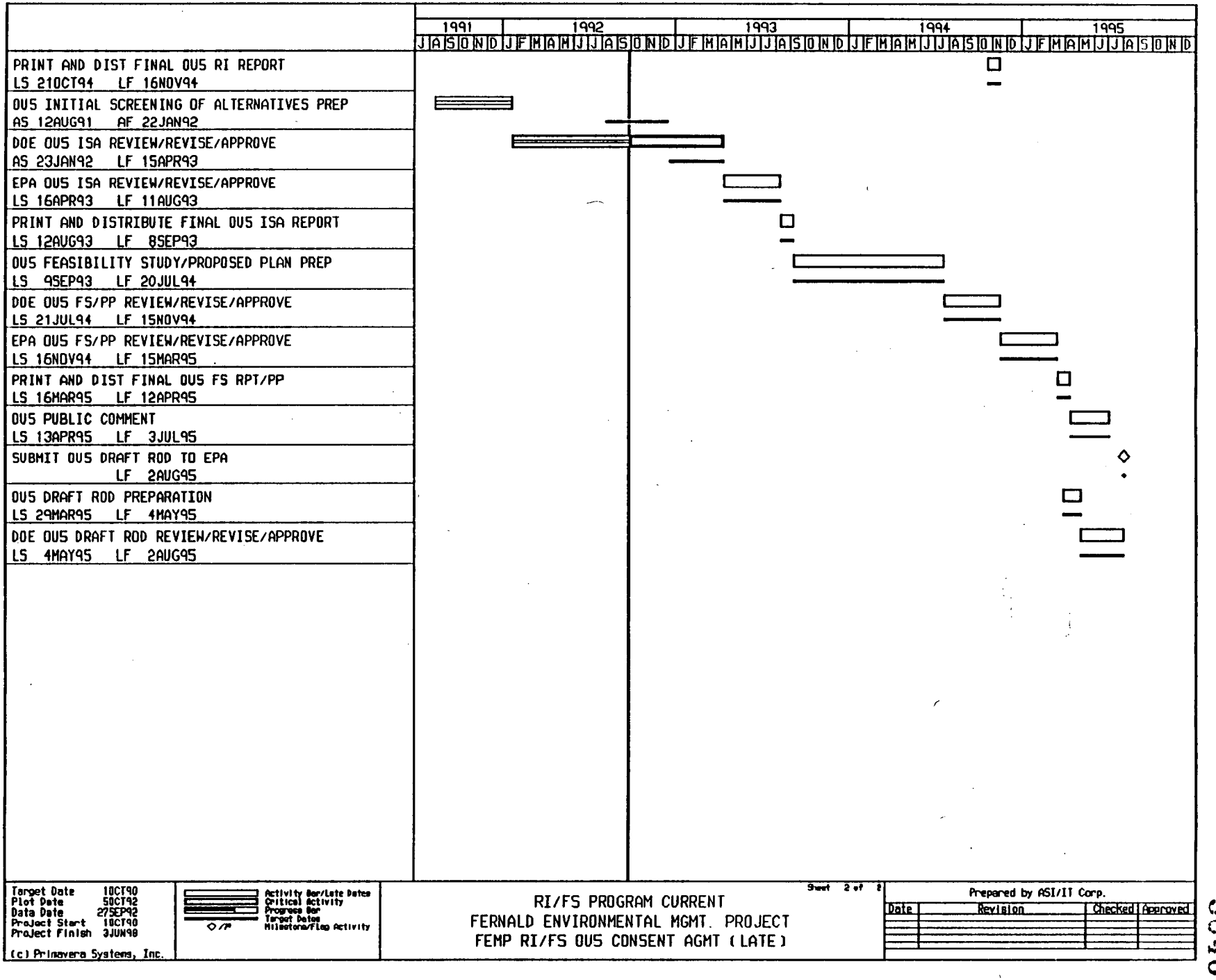
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PRINT AND DIST FINAL OU5 RI REPORT
LS 21OCT94 LF 16NOV94
OU5 INITIAL SCREENING OF ALTERNATIVES PREP
AS 12AUG91 AF 22JAN92
DOE OU5 ISA REVIEW/REVISE/APPROVE
AS 23JAN92 LF 15APR93
EPA OU5 ISA REVIEW/REVISE/APPROVE
LS 16APR93 LF 11AUG93
PRINT AND DISTRIBUTE FINAL OU5 ISA REPORT
LS 12AUG93 LF 8SEP93
OU5 FEASIBILITY STUDY/PROPOSED PLAN PREP
LS 9SEP93 LF 20JUL94
DOE OU5 FS/PP REVIEW/REVISE/APPROVE
LS 21JUL94 LF 15NOV94
EPA OU5 FS/PP REVIEW/REVISE/APPROVE
LS 16NOV94 LF 15MAR95
PRINT AND DIST FINAL OU5 FS RPT/PP
LS 16MAR95 LF 12APR95
OU5 PUBLIC COMMENT
LS 13APR95 LF 3JUL95
SUBMIT OU5 DRAFT ROD TO EPA
LF 2AUG95
OU5 DRAFT ROD PREPARATION
LS 29MAR95 LF 4MAY95
DOE OU5 DRAFT ROD REVIEW/REVISE/APPROVE
LS 4MAY95 LF 2AUG95
Target Date 10CT90
Plot Date 50CT92
Data Date 27SEP92
Project Start 10CT90
Project Finish 3JUN98
(c) Primavera Systems, Inc.
Activity Bar/Late Dates
Critical Activity
Progress Bar
Target Dates
Milestone/Flag Activity
Sheet 2 of 8
RI/FS PROGRAM CURRENT
FERNALD ENVIRONMENTAL MGMT. PROJECT
FEMP RI/FS OU5 CONSENT AGMT (LATE)
Prepared by ASI/IT Corp.
Date
Revision
Checked
Approved

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CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

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 (SAP) 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, "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (EPA 1988).

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 were collected for analysis from 18 geotechnical borings (each approximately 30 feet deep) and from eight wells (five 1000-series and three 2000-series) installed under this program.

All surface soil samples received full radiological and full HSL analysis while, in general, samples collected at midstratum of the glacial overburden received 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 remainder of the collected soil samples received geotechnical testing for preliminary engineering purposes. In addition, an on- and off-property National Environmental Policy Act (NEPA) ecological characterization program was 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).

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

6.1 Sampling and Analysis Plan (continued)

Status:

The original field effort was 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 were made to install five additional geotechnical borings and to relocate the well pair. The five geotechnical borings were completed in March 1992; the well pair relocation was completed in April 1992.

The off-site ecological walk-over survey was conducted April 13 through April 16, 1992.

Chemical and radiological analyses of the EWMF soil samples were completed in May 1992. Soil samples for geochemical analysis were submitted in early June 1992. All analytical efforts, except for batch sorption testing, were completed in August 1992.

Issues/Corrective Actions:

None to report.

6.2 EWMF General Siting Report

Scope:

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

Status:

The EWMF ARARs Revision 3 were submitted by the DOE for U.S. EPA and Ohio 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.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

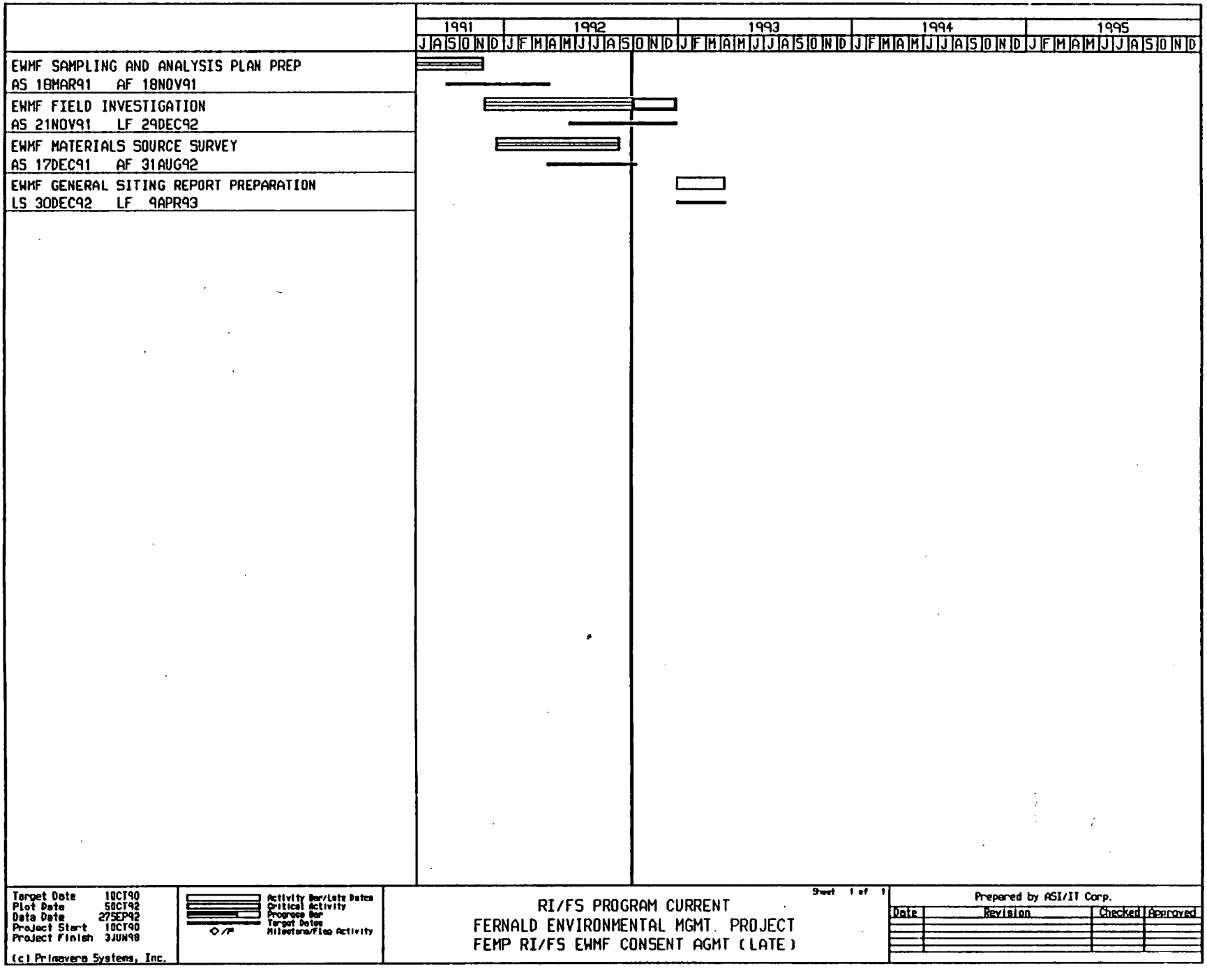
6.2 EWMF General Siting Report (continued)

Issues/Corrective Actions:

None to report.

6.3 Planned Activities for October 1992

- Initiate writing the EWMF siting report technical chapters.
- Continue batch sorption tests at Brookhaven National Laboratory.
- Initiate fate and transport modeling.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EWMF SAMPLING AND ANALYSIS PLAN PREP
AS 18MAR91 AF 18NOV91
EWMF FIELD INVESTIGATION
AS 21NOV91 LF 29DEC92
EWMF MATERIALS SOURCE SURVEY
AS 17DEC91 AF 31AUG92
EWMF GENERAL SITING REPORT PREPARATION
LS 30DEC92 LF 9APR93
Target Date 10CT90
Plot Date 50CT92
Data Date 27SEP92
Project Start 10CT90
Project Finish 3JUN98
(c) Primavera Systems, Inc.
Activity Bar/Late Dates
Critical Activity
Progress Bar
Target Dates
Milestone/Flag Activity
Sheet 1 of 1
RI/FS PROGRAM CURRENT
FERNALD ENVIRONMENTAL MGMT. PROJECT
FEMP RI/FS EWMF CONSENT AGMT (LATE)
Prepared by ASI/IT Corp.
Date
Revision
Checked
Approved

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CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

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 determine 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 to develop 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:

The (Final) Risk Assessment Work Plan Addendum was transmitted to the U.S. EPA and Ohio EPA on June 19, 1992.

Issues:

Response to comments received from U.S. EPA on August 6, 1992, were submitted to U.S. EPA on September 24, 1992.

Corrective Actions:

None to report.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

7.2 SWCR Report Preparation

Scope:

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

Status:

The SWCR was submitted to the U.S. EPA on August 5, 1992. Comments were not received as of September 30, 1992.

SITE-WIDE CHARACTERIZATION REPORT **SECONDARY**

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

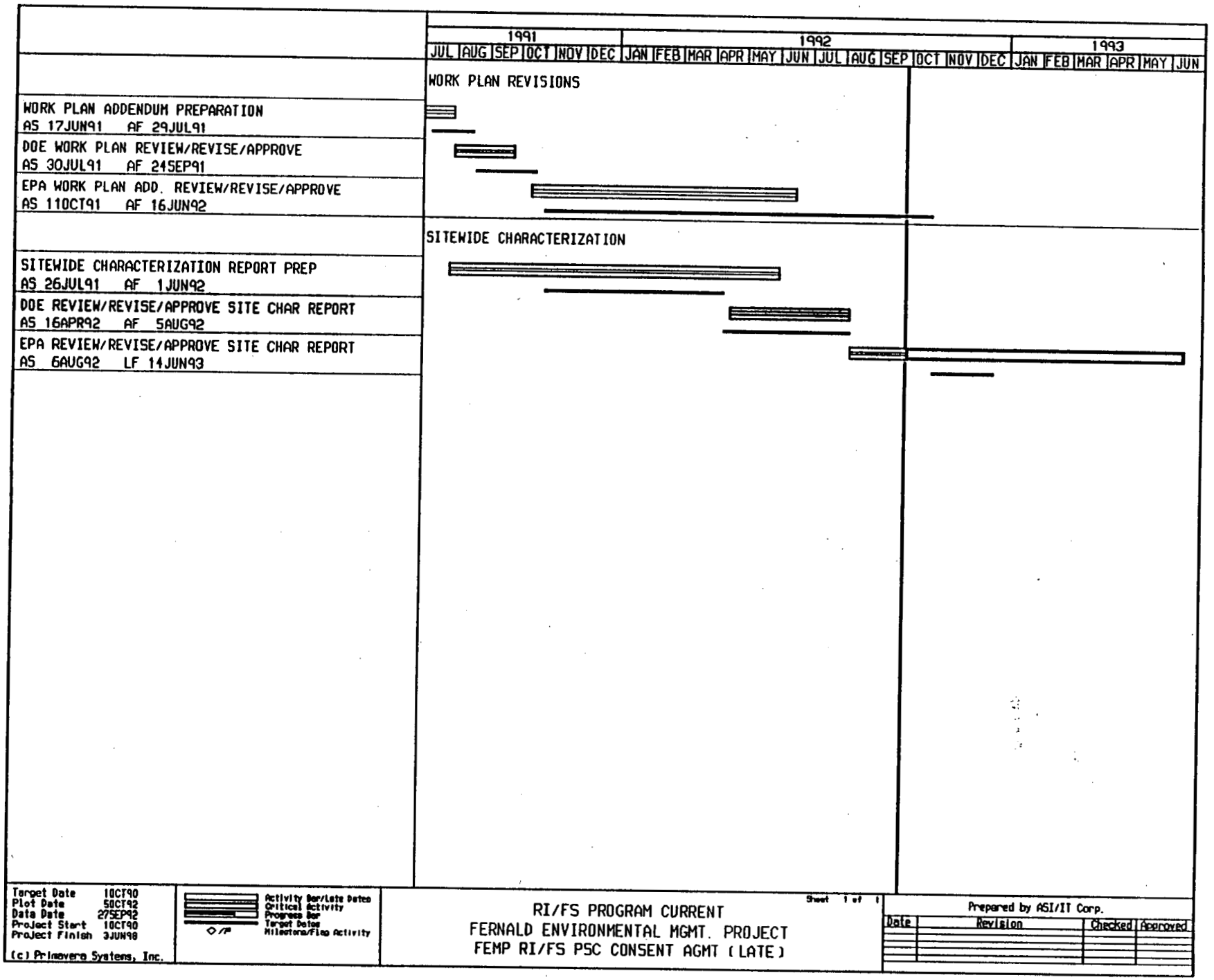
C = Consent Agreement Date A = Actual

Issues/Corrective Actions:

Delay in receipt of comments will delay revisions. Significant comments on Leading Remedial Alternatives could affect the Operable Unit 2 FS schedule by impacting the FS Comprehensive Response Action Risk Evaluation.

7.2.1 Planned Activities for October 1992

- Receive review comments from the U.S. EPA and the Ohio EPA.
- Begin revisions in response to comments from the U.S. EPA and the Ohio EPA.


1991
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JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN
WORK PLAN REVISIONS
WORK PLAN ADDENDUM PREPARATION
AS 17JUN91 AF 29JUL91
DOE WORK PLAN REVIEW/REVISE/APPROVE
AS 30JUL91 AF 24SEP91
EPA WORK PLAN ADD. REVIEW/REVISE/APPROVE
AS 11OCT91 AF 16JUN92
SITEWIDE CHARACTERIZATION
SITEWIDE CHARACTERIZATION REPORT PREP
AS 26JUL91 AF 1JUN92
DOE REVIEW/REVISE/APPROVE SITE CHAR REPORT
AS 16APR92 AF 5AUG92
EPA REVIEW/REVISE/APPROVE SITE CHAR REPORT
AS 6AUG92 LF 14JUN93
Target Date 10CT90
Plot Date 5OCT92
Data Date 27SEP92
Project Start 10CT90
Project Finish 3JUN98
(c) Primavera Systems, Inc.
Activity Bar/Late Dates
Critical Activity
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RI/FS PROGRAM CURRENT
FERNALD ENVIRONMENTAL MGMT. PROJECT
FEMP RI/FS PSC CONSENT AGMT (LATE)
Prepared by ASI/IT Corp.
Date
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CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

8.0 Community Relations

8.1 Status

The revised Community Relations Plan (CRP), with all agencies' comments incorporated or addressed, was submitted to U.S. EPA for approval on September 10, 1992. Included with the submittal were 11 addenda to the CRP for removal actions at the FEMP. All the removal actions had: (1) established Administrative Record files, (2) published Notices of Availability, and (3) undergone a public comment period. These activities meet the requirements for removal actions as stipulated by the NCP and CERCLA/SARA. The 11 removal actions are:

No. 1	Contaminated Water Beneath FEMP Buildings
No. 4	Silos 1 & 2
No. 5	K-65 Decant Sump Tank
No. 7	Plant 1 Pad Continuing Release
No. 9	Removal of Waste Inventories and Thorium Management
No. 10	Active Flyash Pile Controls
No. 12	Safe Shutdown
No. 13	Plant 1 Ore Silos
No. 14	Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator
No. 16	Collect Uncontrolled Production Area Runoff - Northeast
No. 17	Improved Storage of Soil and Debris

On September 12, 1992, a full-scale joint emergency response exercise was held at the FEMP. The purpose of the exercise was to test the emergency preparedness/ emergency response capabilities of the FEMP and the state and local agencies. Participating in the "mock disaster" were personnel from DOE-FN, DOE-HQ, WEMCO, State of Ohio, and Hamilton and Butler Counties.

On September 15, 1992, the first Community Environmental Education Course was held. The subject was Personal Protective Equipment and approximately 30 residents from the surrounding areas attended. On September 22, 1992, the second course focusing on Soil Sampling was attended by approximately 38 residents.

On September 18, 1992, the fourth annual Great Miami River Cleanup was conducted. Fifteen DOE workers employed at Fernald volunteered to help. DOE gave a one-time $75,000 grant to the program, spearheaded by the Miami Conservancy District, as part of a settlement worked out with the U.S. EPA as a result of pollution at the Fernald plant.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

8.0 Community Relations (continued)

On September 28, 1992, a Roundtable focusing on the Environmental Restoration Management Contractor was held at the Executive Resource Associates ALPHA Building. Fluor Daniel Environmental Restoration Management Corp. (FERMCO) addressed questions/comments from the five local residents and business leaders who attended.

On September 29 and 30, 1992, the recently formed DOE Environmental Management Advisory Committee (EMAC) held a two-day meeting at the Sheraton Springdale Hotel. The committee toured the Fernald plant the morning of September 29, 1992. The evening was reserved for the public to comment on their problems and concerns which the EMAC will report back to DOE. The committee will also advise DOE on ways to address the problems. Six speakers, representing various organizations, presented their concerns.

Issues/Corrective Actions:

None to report.

8.1.2 Planned Activities for October 1992

The DOE at the FEMP has developed an eight-week Community Environmental Education Course. Sessions will be held on October 6, 13, 20, and 27, 1992, from 7:00 - 9:00 p.m. in Classroom B at the Executive Resource Associates ALPHA Building.

A technical workshop given by the Centers for Disease Control on the Fernald Dosimetry Reconstruction Project will be held October 7, 1992, from 7:00 - 9:00 p.m. at the Sheraton Springdale Hotel.

A Roundtable focusing on the Site-Wide Characterization Report will be held October 19, 1992, at the Executive Resource Associates ALPHA Building.

The next issue of the *Fernald Project Cleanup Report* is due out October 27, 1992.

Another workshop for the public to review and comment on DOE documents will be held in late October 1992.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

PERIOD ENDING SEPTEMBER 30, 1992

ENCLOSURE A

WASTEWATER FLOWS AND RADIONUCLIDE

CONCENTRATIONS UNDER CA SECTION XXIII.B

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

Introduction

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

Summary - September 1992

The total quantity of uranium discharged from the FEMP to the Great Miami River via Manhole 175 (Outfall 11000004001) was 22.45 kilograms. The average uranium concentration for the previous 12 months was 0.53 mg/L. This is 59.6% 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 September 1992. Based on 2.05 inches of rainfall in September 1992, the total quantity of uranium discharged to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 9.23 kilograms. A reevaluation of the methodology used to calculate this estimate is being initiated to accurately account for the impact of Removal Action No. 2.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

Wastewater Flows and Radionuclide Concentrations

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

Location: 1I000004001 Month: September 1992
001 Total Discharge
Manhole 175 (Effluent to the Great Miami River)

Day	Flow (MGD)	Total Alpha (pCi/L)	Total Beta (pCi/L)	Total U (mg/L)	Total U (kgs)	Calculated Total U-238 (pCi/L) (1)
1	0.395	189	90	0.36	0.54	122
2	0.654	113	54	0.22	0.54	74
3	0.395	158	81	0.24	0.36	81
4	0.408	194	131	0.24	0.37	81
5	0.417	180	90	0.23	0.36	78
6	0.550	95	63	0.19	0.40	64
7	0.375	257	104	0.26	0.37	88
8	0.307	333	140	0.31	0.36	105
9	0.338	135	131	0.15	0.19	51
10	0.370	198	81	0.16	0.22	54
11	0.435	257	72	0.19	0.31	64
12	0.412	212	99	0.28	0.44	95
13	0.171	347	176	0.56	0.36	189
14	0.331	248	230	0.38	0.48	128
15	0.303	252	86	0.34	0.39	115
16	0.311	550	248	0.80	0.94	270
17	0.372	212	113	0.35	0.49	118
18	0.433	167	113	0.30	0.49	101
19	0.420	234	45	0.34	0.54	115
20	0.247	414	171	0.63	0.59	213
21	0.452	423	189	0.71	1.21	240
22	0.950	514	122	0.78	2.80	264
23	0.791	329	45	0.48	1.44	162
24	1.137	293	9	0.41	1.76	139
25	0.865	216	131	0.37	1.21	125
26	0.266	608	149	0.91	0.92	307
27	0.354	270	72	0.61	0.82	206
28	0.575	230	180	0.48	1.04	162
29	0.902	149	104	0.36	1.23	122
30	1.161	189	36	0.29	1.27	98
TOTAL	15.097				22.45	

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON -222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

Wastewater Flows and Radionuclide Concentrations

Facility: Fernald Environmental Management Project

Location: 001 Total Discharge

Month September 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.	0.503	257	98	0.39	0.75	133
Max.	1.161	608	248	0.91	2.80	307
Min.	0.171	95	9	0.15	0.19	51

The average uranium concentration for the previous twelve months was 0.53 mg/L. This is 59.6% 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 FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30,1992

Wastewater Flows and Radionuclide Concentrations

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

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

Month: September 1992

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

Based on 2.05 inches of rainfall for the month, the uranium discharge to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 9.23 kgs.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

PERIOD ENDING SEPTEMBER 30, 1992

ENCLOSURE B

FFCA: INITIAL REMEDIAL MEASURES

AND OTHER OPEN ACTIONS

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

INTRODUCTION

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

WORK ASSIGNMENTS AND PROGRESS

Descriptions of ongoing work progress are presented in the following sections of this report. The status of ongoing work in support of the Federal Facility Compliance Agreement (FFCA) is summarized in Table 1 of Enclosure B. Completed work previously reported upon has been eliminated for the saké 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 FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

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

3. Reports and Record Keeping

Section B

The RI/FS Monthly Technical Progress Report for August 1992 was transmitted to the U.S. EPA on September 23, 1992, as an integral part of the Consolidated Consent Agreement/Federal Facility Compliance Agreement/Federal Facility Agreement for Control and Abatement of Radon-222 Emissions (CA/FFCA/FFA-CARE) 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 August 31, 1992, was transmitted to the U.S. EPA on September 23, 1992, as Enclosure B of the Consolidated Consent Agreement/Federal Facility Compliance Agreement/Federal Facility Agreement for Control and Abatement of Radon-222 Emissions (CA/FFCA/FFA-CARE) Monthly Progress Report.

TABLE 1

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

SEPTEMBER 30, 1992

ACTION	DESCRIPTION	COMPLETION TIME AFTER FFCA SIGNED	FY1992 STATUS
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 August 1992 was transmitted to the U.S. EPA on September 23, 1992 (DOE-2735-92).
CLEAN AIR ACT			
B.4	Prepare annual progress report installation and replacement of emission control devices.	yearly	The Fourth Annual Progress Report on the installation and replacement of emission control devices was transmitted to the U.S. EPA on January 28, 1992 (DOE-982-92).

TABLE 1

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

SEPTEMBER 30, 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, 1992 (DOE-1912-92).
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. Stacks in areas such as the Laboratory are currently being identified for testing during FY1993. Procurement activities are in process to obtain services for performance of the tests.
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. Stacks in areas such as the Laboratory are currently being identified for testing during FY1993. Procurement activities are in process to obtain services for performance of the tests.
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.

TABLE 1

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

SEPTEMBER 30, 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	August's FFCA Monthly Progress Report was transmitted to the U.S. EPA on September 23, 1992 (DOE-2735-92).

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

PERIOD ENDING SEPTEMBER 30, 1992

ENCLOSURE C

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

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

Introduction

The Federal Facility Agreement for Control and Abatement of Radon-222 Emissions (FFA-CARE) 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 September 1 through September 30, 1992, to implement Part V, Radon-222 Control and Abatement Plan, paragraphs 19-33 of the FFA-CARE.

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-CARE. Immediately following this section are the K-65 Silos Report and the Selected Radon Data Report. Reporting this data is also a requirement included in the U.S. EPA approved Silos 1 and 2 Removal Action Work Plan (Removal Action No. 4).

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

FFA Part, Paragraph(s)	Description of Commitment	FFA Due Date	Status of Commitment
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.	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. DOE is preparing a revision to the methodology.
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. (DOE is preparing a revision to the methodology.)
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 any newly discovered radon-222 emission sources.	None specified.	No information to report for September 1992.

FFA Part, Paragraph(s)	Description of Commitment	FFA Due Date	Status of Commitment
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.	Radon sampling is complete for Pits 1, 2, and 3. All measurements were below the criteria set by the U.S. EPA. A final report was issued to the U.S. EPA on 6/25/92. Pit 4 will be monitored by the end of CY1992. Contingent upon written approval from the U.S. EPA, the Clearwell will not have to be sampled. DOE and U.S. EPA are negotiating whether Pit 5 needs to be monitored.
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.	See above.
Part V, 27	Estimate radon-222 emissions from Silo 3 based upon characterization data; include the estimated 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 September 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.

FFA Part, Paragraph(s)	Description of Commitment	FFA Due Date	Status of Commitment
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-CARE and the data obtained in the preceding month.	20th day of succeeding month.	The ninth progress report being submitted herewith as an integral part of the CERCLA Consent Agreement Monthly Progress Report.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending September 30, 1992

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

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

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

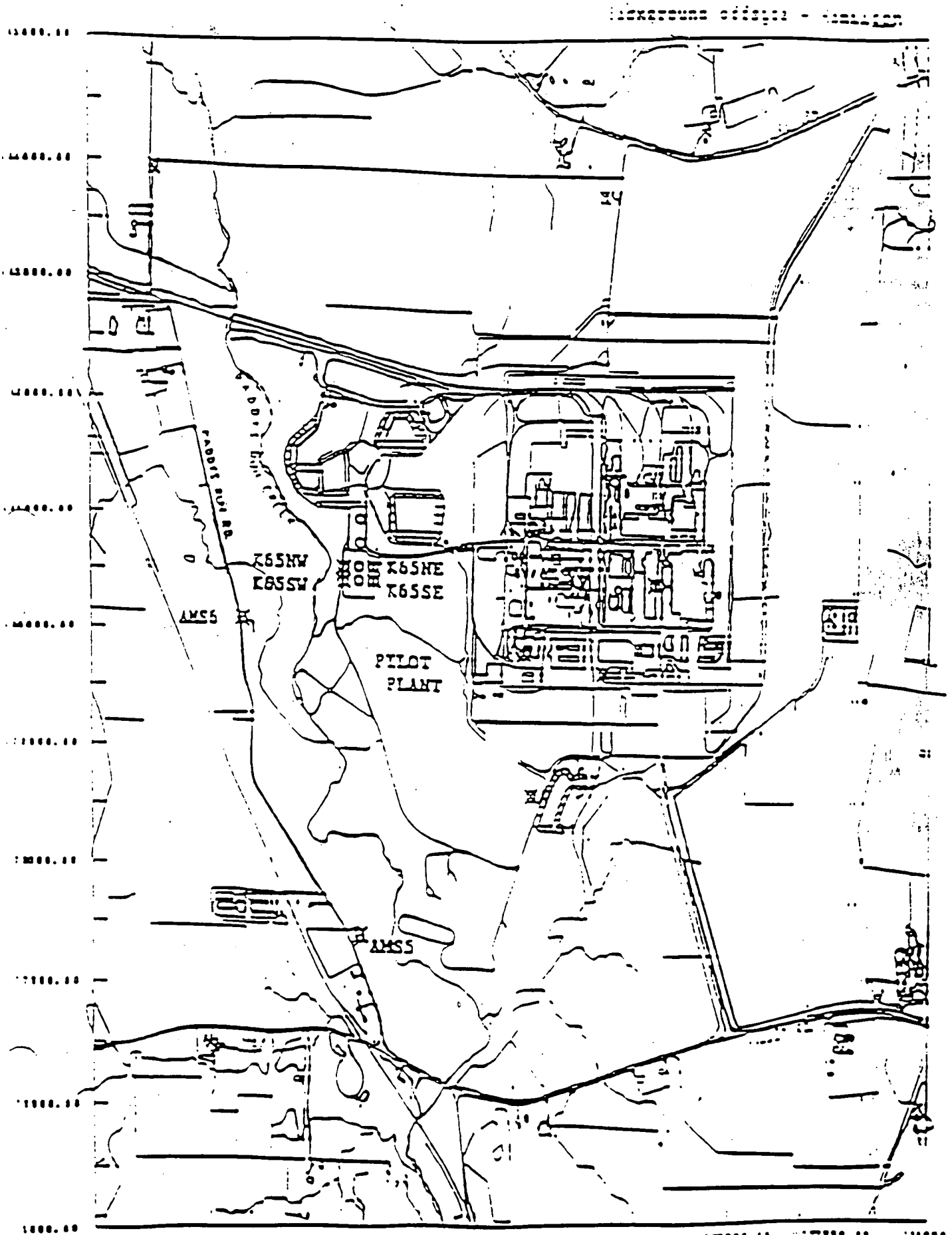
- Ambient temperature and pressure near the silos.
- Silos 1 and 2 headspace temperature.
- Silos 1 and 2 differential pressure.
- Silos 1 and 2 radon headspace concentration.
- Silos 1 and 2 headspace humidity

The silo radon headspace data submitted was collected manually since the completion of the bentonite installation until mid-July 1992. Currently, the data for Silos 1 and 2 and the perimeter pylons is automatically recorded.

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

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

REAL-TIME RADON MONITORING LOCATIONS



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: SEPTEMBER 1992

Day	Ambient Temp Deg. F	Ambient Pres In. Hg.	Temperature Head Space Deg. F	Inter. Hum. %	Diff. Pres In. HG	Head Space Radon (pCi/l)
1	62.9	29.6	64.3	•	−0.001	47,700
2	67.1	29.4	64.3	•	−0.002	79,180
3	71.3	29.4	64.5	*	−0.001	34,220
4	69.0	29.6	64.6	•	−0.001	40,390
5	71.2	29.6	64.7	*	0.000	60,610
6	71.1	29.6	64.9	•	0.000	46,590
7	70.3	29.5	65	•	0.000	58,270
8	69.1	29.5	65	•	−0.001	46,040
9	73.9	29.4	64.9	*	0.000	67,530
10	65.8	29.4	65.3	*	−0.002	30,880
11	54.8	29.6	64.4	•	−0.004	7,600
12	55.9	29.7	63.6	•	−0.003	27,910
13	60.5	29.6	63.3	•	−0.002	41,700
14	65.2	29.6	63.5	•	−0.001	44,430
15	67.8	29.7	63.8	*	−0.001	41,410
16	66.8	29.6	64.1	*	−0.001	48,270
17	68.1	29.5	64.2	94	0.001	75,890
18	68.1	29.3	64.4	96	0.010	64,260
19	58.8	29.4	63.9	96	0.049	29,000
20	58.6	29.4	63.2	97	−0.003	68,180
21	71.2	29.3	63.5	96	0.008	76,530
22	63.5	29.3	63.8	96	0.030	38,130
23	50.9	29.6	62.8	97	−0.005	2,630
24	53.1	29.6	62.1	99	−0.004	10,630
25	56.1	29.6	61.7	100	−0.003	43,910
26	60.1	29.5	61.8	100	−0.003	61,540
27	61.2	29.5	62	100	−0.003	23,550
28	55.1	29.6	61.7	100	−0.004	16,290
29	44.3	29.7	61.2	100	−0.006	7,160
30	45.5	29.7	60.3	100	−0.006	20,822
ARITHMETIC MEAN	62.6	29.5	63.6	97.9	0.001	42,042
MAXIMUM	73.9	29.7	65.3	100.0	0.049	79,180
MINIMUM	44.3	29.3	60.3	94.0	−0.006	2,630
MEDIAN	64.3	29.6	63.9	98.0	−0.001	42,805

Note: • – Sensor failed, replaced with new unit.

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 # 2 DATE: SEPTEMBER 1992

Day	Ambient Temp Deg. F	Ambient Pres In. Hg.	Temperature Head Space Deg. F	Inter. Hum. %	Diff. Pres In. HG	Head Space Radon (pCi/l)
1	62.9	29.6	63.6	99	-0.009	262,460
2	67.1	29.4	63.6	99	-0.009	281,580
3	71.3	29.4	63.7	97	-0.01	165,420
4	69.0	29.6	63.9	97	-0.009	**
5	71.2	29.6	63.9	97	0.013	**
6	71.1	29.6	64.1	96	0.052	**
7	70.3	29.5	64.3	96	-0.009	**
8	69.1	29.5	64.4	96	-0.01	**
9	73.9	29.4	64.3	96	-0.01	**
10	65.8	29.4	64.6	96	-0.009	212,830
11	54.8	29.6	63.8	98	-0.009	190,140
12	55.9	29.7	63.1	100	-0.009	245,040
13	60.5	29.6	62.8	*	-0.009	275,060
14	65.2	29.6	62.9	*	-0.009	256,370
15	67.8	29.7	63.2	*	-0.009	246,650
16	66.8	29.6	63.5	*	-0.009	284,600
17	68.1	29.5	63.6	94	-0.01	295,250
18	68.1	29.3	63.8	96	0.005	259,330
19	58.8	29.4	63.3	97	0.029	222,680
20	58.6	29.4	62.7	98	-0.008	297,810
21	71.2	29.3	62.9	96	-0.003	238,970
22	63.5	29.3	63.2	97	0.023	231,920
23	50.9	29.6	62.3	99	-0.009	125,720
24	53.1	29.6	61.5	100	-0.009	171,330
25	56.1	29.6	61.1	100	-0.009	261,410
26	60.1	29.5	61.2	100	-0.009	**
27	61.2	29.5	61.4	98	-0.009	**
28	55.1	29.6	61.1	97	-0.009	**
29	44.3	29.7	60.6	98	-0.008	**
30	45.5	29.7	59.8	100	-0.008	208,265
ARITHMETIC MEAN	62.6	29.5	62.9	97.8	-0.003	236,642
MAXIMUM	73.9	29.7	64.6	101.0	0.052	297,810
MINIMUM	44.3	29.3	59.8	94.0	-0.010	125,720
MEDIAN	64.3	29.6	63.3	97.5	-0.009	245,845

Note: * – Maintenance being performed on system.
** – Electronic error produced erroneous data, corrective action in progress.

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: SEPTEMBER, 1992

Date	AMS 5 (pCi/L)	AMS 6 (pCi/L)	PILOT PLANT (pCi/L)	BKGRD (pCi/L)
09/01/92	1.2	1.2	1.1	0.8
09/02/92	0.9	0.9	0.8	0.6
09/03/92	0.5	0.5	0.6	0.4
09/04/92	1.0	0.9	0.8	0.6
09/05/92	0.9	0.8	0.7	0.6
09/06/92	1.3	1.2	1.1	0.7
09/07/92	1.6	1.3	1.3	0.6
09/08/92	1.0	0.9	1.0	0.6
09/09/92	0.8	0.9	0.8	0.6
09/10/92	0.5	0.4	0.7	0.4
09/11/92	1.3	1.2	0.7	0.7
09/12/92	1.4	1.2	0.7	0.7
09/13/92	1.6	1.3	1.2	0.9
09/14/92	1.8	1.4	1.3	1.2
09/15/92	1.4	1.3	1.2	1.0
09/16/92	1.3	1.2	1.3	1.0
09/17/92	1.7	1.4	1.5	1.0
09/18/92	0.7	0.7	0.7	0.6
09/19/92	0.7	0.6	0.6	0.5
09/20/92	1.4	1.2	1.1	0.8
09/21/92	0.5	0.6	0.5	0.4
09/22/92	0.3	0.4	0.5	0.3
09/23/92	0.3	0.3	0.4	0.3
09/24/92	0.5	0.5	0.6	0.4
09/25/92	1.2	1.1	1.1	0.7
09/26/92	1.2	1.2	1.1	0.8
09/27/92	0.5	0.5	0.6	0.4
09/28/92	1.1	1.1	1.1	0.7
09/29/92	0.7	0.7	0.6	0.4
09/30/92	1.3	1.3	1.4	0.8
AVERAGE	1.0	0.9	0.9	0.6
MAXIMUM	1.8	1.4	1.5	1.2
MINIMUM	0.3	0.3	0.4	0.3
MEDIAN	1.0	0.9	0.8	0.6
Std. Dev	0.4	0.3	0.3	0.2

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: SEPTEMBER, 1992

Date	K-65 NW (pCi/L)	K-65 SW (pCi/L)	K-65 NE (pCi/L)	K-65 SE (pCi/L)
09/01/92	1.6	1.8	3.7	1.8
09/02/92	1.5	1.8	1.9	1.3
09/03/92	0.8	1.0	0.9	0.4
09/04/92	1.4	1.7	1.4	1.0
09/05/92	1.6	1.6	1.4	0.9
09/06/92	2.2	2.1	2.9	1.6
09/07/92	2.0	2.2	5.0	2.1
09/08/92	1.4	1.8	3.7	1.4
09/09/92	1.7	2.0	1.5	1.7
09/10/92	0.9	*	1.7	*
09/11/92	1.5	*	2.6	*
09/12/92	2.0	*	3.1	*
09/13/92	2.0	*	5.0	*
09/14/92	2.0	2.1	6.5	*
09/15/92	1.8	2.6	4.0	2.4
09/16/92	1.7	1.9	4.2	3.3
09/17/92	2.1	2.3	5.7	4.0
09/18/92	1.5	1.5	1.9	2.5
09/19/92	1.2	1.5	1.7	2.7
09/20/92	2.2	2.3	3.3	2.2
09/21/92	1.1	1.4	1.0	0.6
09/22/92	0.7	0.8	0.6	0.6
09/23/92	0.6	1.1	0.5	0.6
09/24/92	1.2	2.0	1.1	1.0
09/25/92	1.9	3.4	3.3	1.5
09/26/92	1.7	2.2	3.0	1.5
09/27/92	0.8	0.9	1.9	0.6
09/28/92	1.4	1.7	3.0	1.3
09/29/92	1.2	1.3	2.1	1.0
09/30/92	1.8	2.1	4.7	1.8
AVERAGE	1.5	1.8	2.8	1.6
MAXIMUM	2.2	3.4	6.5	4.0
MINIMUM	0.6	0.8	0.5	0.4
MEDIAN	1.5	1.8	2.3	1.5
Std. Dev	0.4	0.6	1.6	0.9

* data unavailable due to unit malfunction

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

PERIOD ENDING SEPTEMBER 30, 1992

ENCLOSURE D

DRILLING/BORING LOGS

RI/FS

3846

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.27	PROJECT NAME: RCRA Phase I Perimeter Well Inst.		
BORING NUMBER: 2434	COORDINATES:	DATE 9-10-92	
ELEVATION:	GWL: Depth 57.5 TOC Date/Time 9-21-92/0800	DATE STARTED: 9-10-92	
ENGINEER/GEOLOGIST: Michael Worley	Depth: Date/Time	DATE COMPLETED: 9-21-92	
DRILLING METHODS: Cable Tool		PAGE 1 OF 7	

DEPTH (FT)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1 6 INCH	RECOVERY (INCH)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	1300 103127 9-10-92	8 12 18	6	Hard (2.5Y, 6/6) ~~light~~ yellow silty clay with organics, NON plastic, dry	ML/CL/CL	9-28-92 >4.5	HNU = 0 ppm Bγ = 40 cpm
2 3	1340 103128 9-10-92	18 25 38	16	Very dense (2.5Y, 7/6) mottled yellow silty clay, NON plastic, dry	ML/CL	9-28-92 N/A	HNU = 0 ppm Bγ = 40 ppm
4	1355 103129 9-10-92	35 31 31	16	Very dense (2.5Y, 7/6) mottled yellow silty clay, NON plastic, dry	ML/CL	9-28-92 N/A	HNU = 1 ppm Bγ = 40 cpm
5 6	1410 103130 9-10-92	29 30 32	12	SAA	CL/ML	9-28-92 N/A	HNU = 0 ppm Bγ = 40 cpm
7	1420 103131 9-10-92	5 28 35	18	Hard (2.5Y, 5/4) mottled, ~~light~~ olive brown silty clay with trace coarse sand and gravel, low plasticity, slightly moist	CL	4.0	HNU = 0 ppm Bγ = 40 cpm
8 9	0910 103132 9-14-92	10 16 23	6	Very stiff (2.5Y, 6/4) light yellowish brown silty clay, low plasticity slightly moist	CL	3.0	HNU = 0 ppm Bγ = 40 cpm
10	0920 103133 9-14-92	5 11 18	4	Very stiff mottled (2.5Y, 6/3) light yellowish brown silty clay with trace gravel, low plasticity slightly moist	CL	2.5	HNU = 0 ppm Bγ = 40 cpm
11 12	0940 103134 9-14-92	10 16 23	18	Hard (2.5Y, N5/) gray clay with trace sand and gravel, medium plasticity, slightly moist	CL	4.5	HNU = 0 ppm Bγ = 40 cpm
13	0950 103135 9-14-92	12 18 29	9	SAA	CL	1.5	HNU = 0 ppm Bγ = 40 cpm
14 15	1000 N/A 9-14-92	29 29 15	0	No Recovery	N/A	N/A	HNU = N/A ppm Bγ = N/A cpm

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: Cable Tool

Driller: Joe Barile
Bob Johnson

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

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

Background Readings: HNU = 0 ppm; Bγ = 40 cpm

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.27	PROJECT NAME: RCRA Phase I		
BORING NUMBER: 2434	COORDINATES:	DATE	9-14-92
ELEVATION:	GWL: Depth 57.5 FT. TOC Date/Time 9-21-92/0800	DATE STARTED:	9-10-92
ENGINEER/GEOLOGIST: Michael Worley	Depth Date/Time	DATE COMPLETED:	9-21-92
DRILLING METHODS: Cable Tool		PAGE	2 OF 7

DEPTH (FT)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1 FT	RECOVERY (IN)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
16	1020 103136 9-14-92	6 6 18	11	Stiff (2.5Y, N6/) gray clay, trace gravel, medium plasticity slightly moist	CL	2.0	HNu = 0 ppm Bγ = 40 cpm
17 18	1030 103137 9-14-92	3 7 13	14	SAA - for top 10 in. Bottom 4 in. - Loose (10YR, 5/8) yellowish brown silt, slightly moist	CL/ML	1.75/N/A	HNu = 0 ppm Bγ = 40 cpm
19	1035 N/A 9-14-92	23 27 26	0	NO RECOVERY	N/A	N/A	HNu = 0 ppm Bγ = 40 cpm
20 21	1045 103138 9-14-92	13 27 26	8	Very dense (10YR, 6/4) light yellowish brown gravely sand, Dry	GP	N/A	HNu = 0 ppm Bγ = 40 cpm
22	1315 103139 9-14-92	7 21 26	12	SAA - slightly moist	GP	N/A	HNu = 0 ppm Bγ = 40 cpm
23 24 25				NEXT sample at 25.0 ft interval, then at every 5.0 ft. interval to 50.0 ft.			
26	1340 103140 9-14-92	45 50/.5	9	Very dense (10YR, 6/4) light yellowish brown sand, trace gravel, Dry	SW	N/A	HNu = 0 ppm Bγ = 40 cpm
27 28 29 30							

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: CABLE TOOL

Driller: Joe Barile
Bob Johnson

* Samples collected per ASTM Standard Penetration Chart
* Colors identified by the Munsell Color Chart

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

Background Readings: HNu = 0 ppm; Bγ = 40 cpm

-07-11-46

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RI/FS

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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.27	PROJECT NAME: RCRA Phase I	
BORING NUMBER: 2434	COORDINATES:	DATE: 9-14-92
ELEVATION:	GWL: Depth 57.5 ft Date/Time 9-21-92/0800	DATE STARTED: 9-10-92
ENGINEER/GEOLOGIST: Michael Worley	Depth Date/Time	DATE COMPLETED: 9-21-92
DRILLING METHODS: Cable Tool		PAGE 3 OF 7

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1 FOOT	RECOVERY (IN)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31	1445 103141 9-14-92	25 40 50	12	~~Hard~~ Very dense (10YR, 5/6) yellowish brown coarse sand, trace gravel, dry	SW	N/A	HNu = 0 ppm Bγ = 40 ppm
32							
33							
34							
35							
36	1600 103142 9-14-92	24 30 32	12	SAA - Top 7 inches, 9-28-92 Bottom 5 inches - ~~Hard~~ very dense (10YR, 5/6) yellowish brown well graded fine sand, slightly moist	SW	N/A	HNu = 0 ppm Bγ = 40 cpm
37							
38							
39							
40	0820 103143 9-15-92	16 26 39	15	~~Hard~~ very dense, 9-28-92 (10YR, 5/6) yellowish brown fine sand, trace gravel, slightly moist	SW	N/A	HNu = 0 ppm Bγ = 40 cpm
41							
42							
43							
44							
45							

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: Cable Tool

Driller: Joe Barile
Bob Johnson

* Samples collected per ASTM Standard Penetration Chart
* Colors identified by the Munsell Color Chart

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

Background Readings { HNu = 0 ppm, Bγ = 40 cpm

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RI/FS

3846

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.04.27	PROJECT NAME: RCRA Phase I		
BORING NUMBER: 2434	COORDINATES:	DATE: 9-15-92	
ELEVATION:	GWL: Depth 57.5 FT EOE Date/Time 9-21-92/0800	DATE STARTED: 9-10-92	
ENGINEER/GEOLOGIST: Michael Worley	Depth: Date/Time:	DATE COMPLETED: 9-21-92	
DRILLING METHODS: Cable Tool		PAGE 4 OF 7	

DEPTH (FT)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1 FOOT	RECOVERY (IN)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
46	0930 103144 9-15-92	10 29 50/.4	14	~~Very dense~~ ~~Hard~~ (10YR, 5/4) Yellowish brown coarse poorly graded sand, trace gravel, slightly moist	SW	N/A	HNu = 0 ppm Bγ = 40 cpm
47							
48							
49							
50							
51	1020 103145 9-15-92	9 28 49	15	SAA ~~Very dense~~ 9-28-92	SW	N/A	HNu = 0 ppm Bγ = 40 cpm
52	1100 103146 9-15-92	46 50 .2	15	~~Hard~~ (10YR, 5/4) Yellowish brown gravely sand, moist	GP	N/A	HNu = 0 ppm Bγ = 40 cpm
53							
54	1315 ~~103146~~ 9-15-92 103147	10 12 27	15	SAA - wet ~~Very dense~~ 9-28-92	GP	N/A	HNu = 0 ppm Bγ = 40 cpm
55	1330 103148 9-15-92	15 42 50	18	~~Hard~~ (2.5Y, 5/2) grayish brown coarse gravely sand, wet ~~Very dense~~ 9-28-92	GP	N/A	HNu = 0 ppm Bγ = 40 cpm
56							
57	1345 103149 9-15-92	22 24 27	18	~~Hard~~ (2.5Y, 5/2) grayish brown poorly graded sand, trace gravel, wet	SP	N/A	HNu = 0 ppm Bγ = 40 cpm
58	1445 103150 9-15-92	24 44 50	15	SAA ~~Very dense~~ 9-28-92	SP	N/A	HNu = ~~N/A~~ 0 ppm 9-15-92 Bγ = ~~N/A~~ 40 cpm 9-15-92
59							
60	1510 103151 9-15-92	30 48 50	18	~~Hard~~ (2.5Y, 5/2) grayish brown well graded sand, trace gravel, wet	SW	N/A	HNu = 0 ppm Bγ = 40 cpm

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: Cable Tool

Driller: Joe Barile
Bob Johnson

* Samples collected per ASTM standard Penetration Chart
* Colors identified by the Munsell Color Chart

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

Background Readings: HNu = 0 ppm; Bγ = 40 cpm

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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 6C2.04.27	PROJECT NAME: RCRA Phase I	
BORING NUMBER: 2434	COORDINATES:	DATE 9-15-92
ELEVATION:	GWL: Depth 57.5 FT. TOC Date/Time 9-21-92/0800	DATE STARTED: 9-10-92
ENGINEER/GEOLOGIST: Michael Worley	Depth Date/Time	DATE COMPLETED: 9-21-92
DRILLING METHODS: Cable Tool		PAGE 5 OF 7

DEPTH (FT)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1 FOOT	RECOVERY (IN)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
60.5				See page 4 of 7			
61	1500	62	18	Very dense Hard (2.5Y, 5/2) grayish brown well graded coarse sand, trace gravel, wet	SW	N/A	HNu = 0 ppm Bγ = 40 cpm
62	103152 9-15-92	44 47					
63	1650 103153 9-15-92	17 28 37	18	SAA	SW	N/A	HNu = 0 ppm Bγ = 40 cpm
64	1710 103154 9-15-92	24 35 50	18	SAA	SW	N/A	HNu = 0 ppm Bγ = 40 cpm
65				Bottom of sampling 65.0 FT			
66							
67							
68							
69							
70				Bottom of boring 70 FT.			

NOTES:

Drilling Contractor: Pennsylvania Drilling

Drilling Equipment: X Cable Tool

Driller: Joe Barile
Bob Johnson

* Samples collected per ASTM Standard Penetration Chart
* Colors identified by the Munsell Color Chart

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

Background Readings: HNu = 0 ppm; Bγ = 40 cpm

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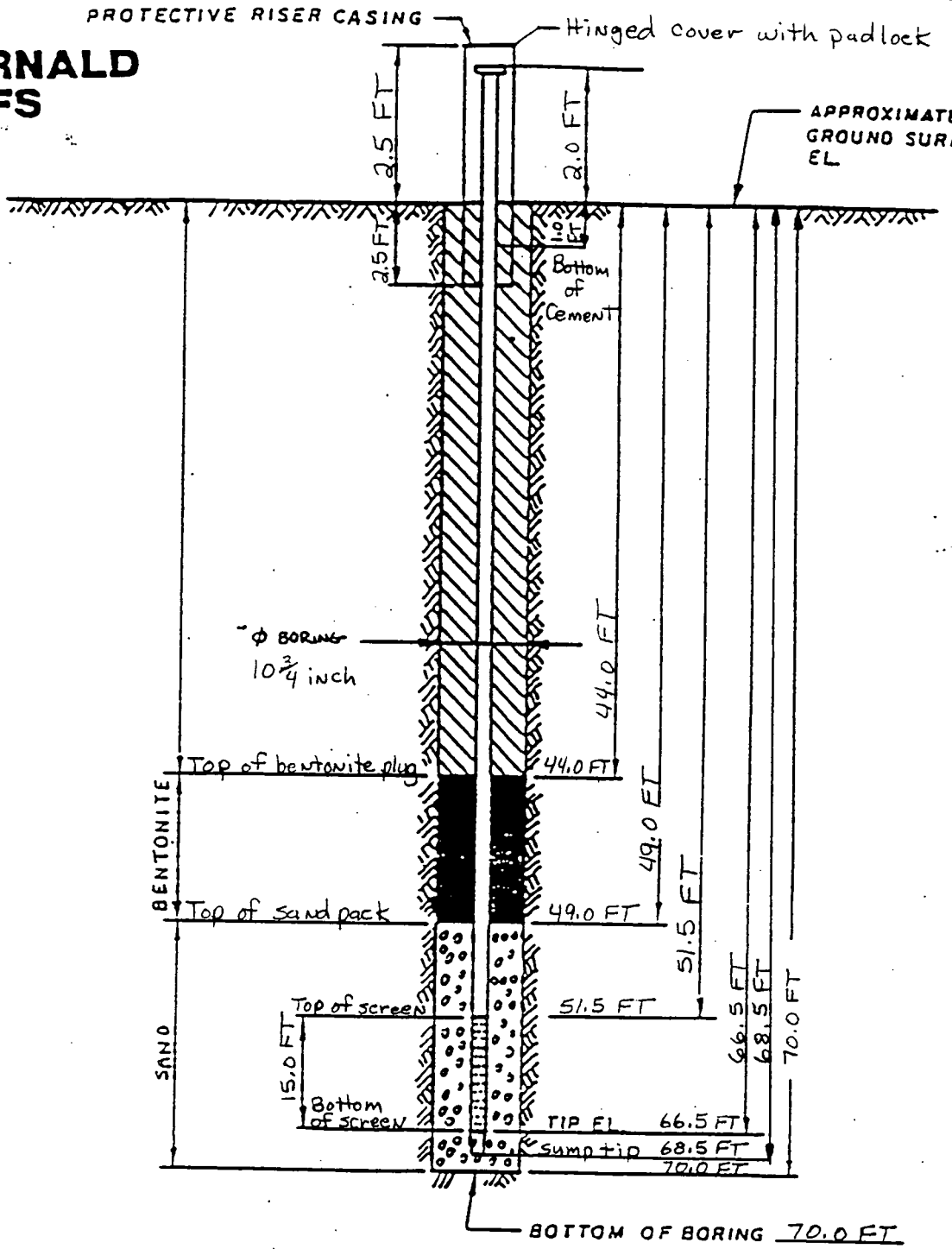
402-11-46

5

FERNALD RI/FS

DRAWING NUMBER | CHECKED BY / APPROVED BY | DRAWN BY



NOTES:

1. RISER PIPE IS 4 IN I.D. SCHEDULE PIPE, THREADED. FLUSH-JOINTED.
2. SCREEN IS 4 IN I.D 316 PIPE CONTINUOUS SLOT SCREEN (0.020 IN. SLOT SIZE)
3. LOWER END OF SCREEN IS CAPPED. (with welded silt trap)
4. ELEVATION OF WATER LEVEL 57.5 (Top of riser)
5. WATER LEVEL READING ON 09-21-92

Materials used during well installation:

15 80 lb. bags of 10/20 sand
11 50 lb. bags of volclay grout
7 5 gal. buckets of bentonite pellets
500 gallons of water used during grouting and drilling procedures

316 stainless steel pipe sections: 1-1.5 FT; 1-2 FT; 5-10 FT, 1-15 FT screen with 2 FT silt trap

INSTALLATION DETAILS
MONITORING WELL #2434

PREPARED FOR
FMPC RI/FS

RI/FS

3846

PIEZOMETER INSTALLATION SHEET

PROJECT NAME RCRA Phase I Perimeter Well Installation
FIELD ENG./GEO. Michael Worley DATE 9-21-9
PRCJECT NC. 602.04.27
CHECKED BY _____ DATE _____
BORING NO. 2434
PIEZOMETER NO. 2434
DATE OF INSTALLATION 9-21-92

BOREHOLE DRILLING

DRILLING METHOD Cable Tool
DRILLING FLUID (S) USED:
FLUID water FROM 0.0 FT TO 70.0 FT
FLUID N/A FROM — TO —

TYPE OF BIT Hammer Percussion Bit
CASING SIZE (S) USED:
SIZE 10.0 in. ID FROM 0.0 FT TC 70.0 FT
SIZE N/A FROM — TC —

PIEZOMETER DESCRIPTION

TYPE Monitoring Well
DIAMETER OF PERFORATED SECTION 4.0 in. I.D
PERFORATION TYPE:
SLOTS [X] HOLES [ ] SCREEN [ ]
AVERAGE SIZE OF PERFORATIONS 0.020 inch
TOTAL PERFORATED AREA 15.0 FT

RISER PIPE MATERIAL 316 stainless steel
RISER PIPE DIAMETERS:
O.D. 4 3/8 inch I.D. 4.0 inch
LENGTH OF PIPE SECTIONS 1-15 FT, 5-10 FT, 1-2 FT, 1-
JOINING METHOD Screw type-flush joint threaded

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH 5.0 FT
PROTECTIVE PIPE O.D. 10 3/4 inch

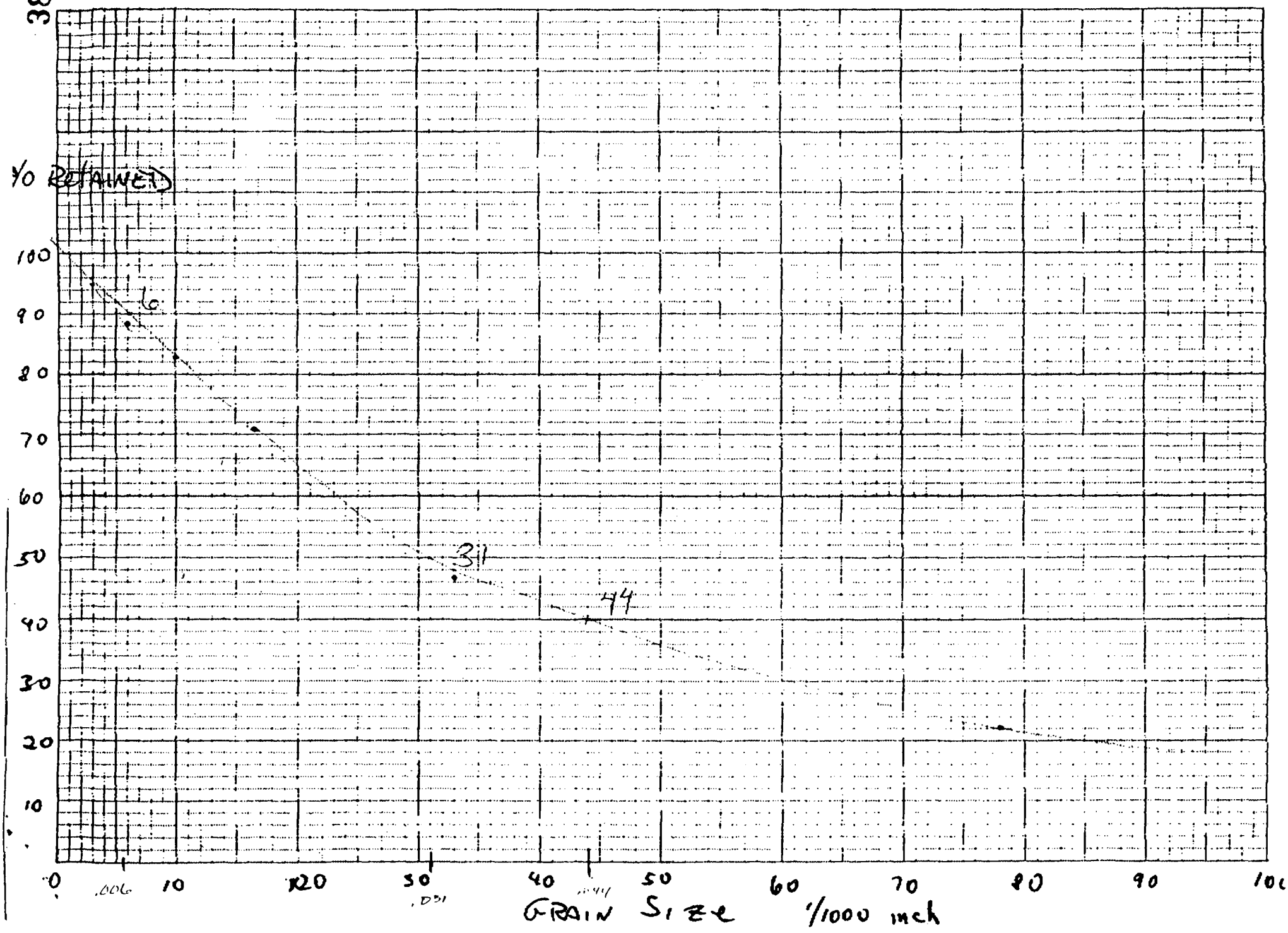
OTHER PROTECTION Hinged locking Cover with padlock

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (FT)		ELEVATION ( )	
TOP OF RISER PIPE	~~2.5~~ 2.0 m 9-20-92			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	2.5			
BOREHOLE FILL MATERIALS:	TOP 0.0	BOTTOM 1.0		
GROUT / ~~SLURRY~~ Cement m 9-21-92	TOP 1.0	BOTTOM ~~42.0~~ 44.0 m 9-21-92	TOP	BOTTOM
BENTONITE PELLETS	TOP 44.0	BOTTOM 49.0	TOP	BOTTOM
SAND 10/20	TOP 49.0	BOTTOM ~~68.5~~ 70.0 m 9-21-92	TOP	BOTTOM
GRAVEL NONE USED	TOP N/A	BOTTOM N/A	TOP	BOTTOM
PERFORATED SECTION	TOP 51.5	BOTTOM 66.5	TOP	BOTTOM
PIEZOMETER TIP	68.5			
BOTTOM OF BOREHOLE	70.0			
GWL AFTER INSTALLATION	57.5			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES [ ] NO [X]
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES [ ] NO [X]
REMARKS Cement placed from 0.0 to 0.1 FT to hold protective Cover in place.

409-11-8

3846


% RETAINED
100
90
80
70
60
50
40
30
20
10
0
6
31
44
.006
.051
.044
10
20
30
40
50
60
70
80
90
100
GRAIN SIZE 1/1000 inch

ANALYTICAL DATA SHEET

SAMPLE NO.	DIL.	BLANK OR CORR.	FACTOR OR NORM.	O.D. READ OR VOL. TITRANT	
920916-063			SAmple	wt 276.1 - t =	270.21
	Al weighing dish	3.8870			
		2mm	10	64.8937 - t = 60.9567	22.4
		.85mm	20	70.4254 - t = 66.5384	24.4
		.425mm	40	69.0020 - t = 65.1150	23.9
		.250mm	60	38.6364 - t = 34.7994	12.8
		.150	100	17.6786 - t = 13.7916	5.1
		.075	200	20.6880 - t = 16.8010	6.2
	PASSES		200+	10.1144 - t = 6.2274	2.3

WT +3.8878 g
WT +64.9437 g
WT +70.4254 g
WT +69.0020 g
WT +38.6364 g
WT +17.6786 g
WT +20.6880 g
WT +10.1144 g

ANALY | CHECKED BY: | DATE: 9-17-92

FMPC-SS-2274 (REV. 7/15/91)

ANALYTICAL DATA SHEET Cumulative % Retained

SAMPLE NO.	DIL.	BLANK OR CORR.	FACTOR OR NORM.	O.D. READ OR VOL. TITRANT	
	10		22.4		
	10+20		46.8	GRAIN SIZE 40 =	44
	10+20+40		70.7	50 =	31
	10+20+40+60		83.5	90 =	6
	10+20+40+60+100		88.6		
	10,20,40,60,100,200		94.8		

ANALYZED BY: | CHECKED BY: | DATE: 9-17-92

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FMPC-SS-2274 (REV. 7/15/91)

90% = .006
50% = .031
40% = .044

$\frac{.044}{.006} = 7.3$ 7.3 > 3 so use factor of 4

4 x .031 = .124

.124 more closely fits the curve for medium sand with .020 screen.