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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 FOR
PERIOD ENDING MAY 31, 1994**

06/20/94

DOE-FN
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REPORT

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**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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Introduction

The Consent Agreement (CA) As Amended under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 120 and 106(a), the Federal Facility Compliance Agreement (FFCA), and the Federal Facility Agreement 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 May 1 through May 31, 1994, and planned actions for the period June 1 through June 30, 1994.

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WORK ASSIGNMENTS AND PROGRESS

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

- CA Section IX - Removal Actions
- CA Section X - Remedial Investigation/Feasibility Study
- Enclosure A - Waste Water Flows and Radionuclide Concentrations under CA Section XXIII.B
- Enclosure B - FFCA: Initial Remedial Measures and Other Open Actions
- Enclosure C - FFA: Control and Abatement of Radon-222 Emissions
- Enclosure D - Effluent Radiation Discharges to the Great Miami River

CA Section IX. Removal Actions

This section provides an update of activities associated with the implementation of Removal Actions (RAs) at the FEMP during May 1994. Information is presented for each of the Removal Actions identified in the Consent Agreement As Amended.

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REMOVAL ACTION SUMMARY

NO.	TITLE	SCOPE	STATUS
Phase I			
1	Contaminated Water Under FEMP Buildings	Pump water from extraction wells underneath Plants 2/3, 6, 8, and 9. Treat extracted water for volatile organic chemicals and uranium removal before discharge.	Treatment: Operational Pumping has not resumed
2	Waste Pit Area Run-off Control	Collect and treat contaminated storm water run-off from the waste pit area.	Construction Completed: 6/15/92 Operational: 7/30/92
3	South Groundwater Contamination Plume	<p>Part 1 - Install new alternate water supply and transfer to industrial user.</p> <p>Part 2 - Pump and discharge groundwater from South Plume.</p> <p>Part 3 - Install and operate Interim Advanced Waste Water Treatment system to reduce uranium contaminant loading to the Great Miami River.</p> <p>Part 4 - Conduct groundwater monitoring and institutional controls by sampling private and existing R/VFS wells in the South Plume area and installing homeowner treatment systems.</p> <p>Part 5 - Conduct groundwater modeling and geochemical investigating to define the extent of the groundwater plume contaminated with uranium</p> <p>OU 2 Dispute Resolution Supplemental Project - Provide for partial treatment of the South Plume discharge to further reduce uranium flow to the Great Miami River.</p>	<p>Operational: 12/7/92</p> <p>Transfer: Ongoing</p> <p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p> <p>Completed: 2/25/94</p> <p>Operational: 3/31/94</p>
4	Silos 1 & 2	Install bentonite cap to reduce and monitor radon emissions. Provide follow-on monitoring.	Cap Completed: 11/28/91 Monitoring: Ongoing
5	Decant Sump Tank	Periodically remove liquid from K-65 decant sump tank.	Ongoing
6	Waste Pit 6 Residues	Eliminate potential airborne contamination by re-submerging exposed pit material.	Completed: 12/19/90

Shading denotes completed actions

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REMOVAL ACTION SUMMARY

NO.	TITLE	SCOPE	STATUS
7	Plant 1 Pad Continuing Release	Stage I - Implement run-on/off control measures. Stage II - Install new pad. Stage III - Upgrade existing Plant 1 Storage Pad.	Completed: 1/17/92 Completed: 12/4/92 Ongoing
Phase II			
8	Inactive Flyash Pile Control	Install plastic chain-link barrier and post warning signs.	Completed: 12/23/91
9	Removal of Waste Inventories	Disposition of low-level waste off-site.	Ongoing
10	Active Flyash Pile Controls	Phase I - Complete interim surface stabilization. Phase II - Complete active flyash pile controls.	Completed: 6/29/92 Maintenance: Ongoing
11	Pit 5 - Experimental Treatment Facility	Remove contents, structure, and filter material. Backfill and cap with clay cover.	Completed: 3/20/92
12	Safe Shutdown	Remove uranium and other material from former processing equipment and ship material and equipment off-site.	Ongoing
13	Plant 1 Ore Silos	Dismantle fourteen ore silos and their support structures.	Ongoing
14	Contaminated Soil Adjacent to Sewage Treatment Plant Incinerator	Isolate or remove and dispose of contaminated soils from the vicinity of the sewage treatment plant.	Ongoing
15	Scrap Metal Piles	Phase I - Disposition LLW ferrous/non-ferrous scrap metal Phase II - IIA - Containerization of scrap copper IIB - Disposition of scrap copper	Ongoing Completed: 9/29/92 Ongoing
16	Collect Uncontrolled Production Area Run-off - Northeast	Collect storm water run-off from the northeast perimeter of the former production area in the Storm Water Retention Basin.	Completed: 8/20/93

* Shading denotes completed actions

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NO.	TITLE	SCOPE	STATUS
17	Improved Storage of Soil and Debris	Improve storage of existing and future generated soils and debris.	Ongoing
18	Control Exposed Material in Pit 5	Eliminate potential airborne contamination by re-submerging exposed pit material.	Completed: 6/30/93
Phase III			
19	Plant 7 Dismantling	Dismantle and dispose of the Plant 7 structure.	Ongoing
20	Stabilization of UNH Inventories	Neutralize, filter and package UNH inventory.	Ongoing
21	Expedited Silo 3	Mitigate the potential release of hazardous waste material by covering and sealing dust collector hopper, removing dust collector, and capping and covering obvious release pathways.	Completed: 2/24/93
22	Waste Pit Area Containment Improvement	Stabilize south berm of Pit 4; regrade drainage ditches along Pits 3, 4, 5, and 6; and resurface road between Pits 3, 4, 5, and 6	Completed: 7/30/93
23	Inactive Flyash Pile	Conduct field investigation to identify locations requiring material removal.	Completed: 4/30/92
24	Pilot Plant Sump	Remove liquid and sludge from the sump.	Completed: 10/15/93
25	Nitric Acid Tank Car and Surrounding Area	Remove residual contents from tank car and decontaminate and dispose of tank car.	Completed: 10/11/93
26	Asbestos Removals (Asbestos Program)	Mitigate the potential for contaminant release and migration of asbestos fibers.	Ongoing

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NO.	TITLE	SCOPE	STATUS
27	Management of Contaminated Structures at the FEMP	Submit an Engineering Evaluation/Cost Analysis for managing contaminated structures. Identify alternatives for managing contaminated structures.	Final EE/CA Approved 6/16/93
28	Contamination at the Fire Training Facility	Remove, decontaminate, dispose, treat or store contaminated structures, equipment, and soil from the former Fire Training Facility.	Ongoing
29	Erosion Control at Inactive Flyash Pile	Mitigate the threat of erosion induced slope failure and discharge of flyash to Paddy's Run.	Final Report Submitted to DOE 2/94

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Removal Actions

RA No. 1, Contaminated Water Under FEMP Buildings

Current Month:

Operation of the Plant 8 VOC Treatment System was limited due to Plant 8 priority on dewatering of SWRB cleanout sludges. Accordingly, the perched groundwater extraction wells have remained shut down. The Plant 6 Motor Bay Sumps Perched Groundwater Collection System continues to operate.

Planned Activities:

- Reestablish operation of the perched groundwater extraction wells.

RA No. 3, South Groundwater Contamination Plume

Part 1 - Alternate Water Supply

Current Month:

Activities to complete the transfer of ownership of the Alternate Water Supply System from DOE to Albright and Wilson Americas (A&W) is ongoing. In 1992, the U.S. EPA and Ohio EPA approved deleting Delta Steel from the current scope of the project, with agreement that they would be served by a planned Public Water Supply (PWS). Progress on the PWS continues with some delays being encountered to address archeological and historical items. A Memorandum of Agreement was prepared for the State Historical Preservation Office. A requisition for Phase IV, cultural resources work was prepared. Phase I of PWS from Bolton Plant to Hamilton/Butler County line is scheduled to bid in July 1994. DOE and the Hamilton County Department of Public Works (HCDPW) agreed to basis of DOE participation for construction of PWS. The HCDPW will submit grant modification.

Planned Activities:

- Continue the proceedings to transfer of ownership of the Alternate Water Supply to A&W.
- Continue to support Hamilton County on installation of the PWS including service connections.

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

Part 2 - Pumping and Discharge System

Current Month:

The capture zone evaluation for the well field continues to suggest that arsenic concentrations in the monitoring wells south of the recovery wells are returning to prepumping levels. Operation of the recovery well field continued at a total rate of 1500 gallons per minute (gpm) (300 gpm each well).

Planned Activities:

- Continue operating recovery well field pumping at a rate of 1500 gpm.
- Data compilation has begun for the next submittal of the recovery well field operation to the EPAs, scheduled for August 1994.

Part 3 - Interim Advanced Waste Water Treatment (IAWWT)

IAWWT Storm Water Retention Basin Unit

Current Month:

With installation of the multimedia filtration unit upstream of the ion exchange units, the operation of the IAWWT has been well maintained with infrequent bag and cartridge filter element replacement.

Planned Activities:

- Continue to operate IAWWT (SWRB) with little downtime due to improved filtration.

IAWWT Bionitrification Effluent Treatment System Unit

Current Month:

Satisfactory operation of the IAWWT unit continues. Permanent repairs of the ion exchange vessels were completed. The two new Ion Exchange (IX) vessels had failures (cracks) of the internal distribution PVC piping; the piping was replaced with stainless steel and the vessels were returned to service. Additional distribution nozzles were also installed in conjunction with the repairs to improve the ion exchange flow distribution and, accordingly, the uranium removal efficiency and lifetime of the IX resin.

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

Planned Activities:

- Continue to operate with less downtime due to permanent ion exchange vessel repairs.

Part 4 - Groundwater Monitoring and Institutional Controls

Current Month:

Sampling of private homeowner and existing RI/FS wells in the South Plume area continues. The two homeowner systems installed south of the FEMP continue to operate successfully. The FEMP is continuing to monitor the effectiveness of the ion exchange resins at these two residences. Trending analysis in collected data indicate the changeout of the resin in the lead columns will be required during 1994. A procedure for resin vessel changeout has been issued for review. Comments received are being addressed.

Planned Activities:

- Approve resin vessel changeout procedure in June and continue to monitor performance.

Operable Unit 2 Dispute Resolution Supplemental Project (Uranium Reduction in FEMP Discharge)

Step 1

Current Month:

The new IAWWT unit referred to as the South Plume Interim Treatment (SPIT) project was completed and placed in operation on March 31, 1994; satisfactory operation continues.

Planned Activities:

- Continue full operation of the system, treating 200 gpm of South Plume flow.

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Operable Unit 2 Dispute Resolution Supplemental Project (Uranium Reduction in FEMP Discharge) (continued)

Step 2

Current Month:

Use off-peak capacity in Phase I of the Advanced Waste Water Treatment (AWWT) system for South Plume flow when no storm water requires treatment. The AWWT package, now under construction, contains piping and valving to transfer South Plume flow to the existing SWRB pumping station for subsequent transfer to Phase I.

Planned Activities:

- The off-peak capacity will be available when Phase I of the AWWT system becomes operational in January 1995.

Step 3

Current Month:

Installation of the AWWT Phase III line began in April which will eventually serve a future AWWT system, Phase III. This will allow South Plume groundwater to be transferred to the AWWT Phase II system to meet this commitment.

Planned Activities:

- Continue installation of AWWT Phase III line. Step 3 will be available when Phase II of the AWWT becomes operational in January 1995.

Step 4

Current Month:

No action was taken in May to extend the planned operational life of the existing IAWWT SWRB unit by converting it from treating storm water to treating South Plume flow, and increasing capacity from 300 gpm to approximately 400 gpm.

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Operable Unit 2 Dispute Resolution Supplemental Project (Uranium Reduction in FEMP Discharge) (continued)

Planned Activities:

- The conversion of the IAWWT SWRB unit will occur after currently treated waste stream is routed to AWWT Phase I in January 1995. Conversion will be accomplished by March 30, 1995.

RA No. 4, Silos 1 and 2

Current Month:

The results of the video camera investigation of the Silo 2 bentonite cap (due to a slight upward trend in headspace radon concentration) were compared against baseline videos of the bentonite surface taken immediately following its installation. Overall, the bentonite cap integrity is in very good condition. The Removal Action No. 4 Final Report was issued to DOE-HQ on March 25, 1994. Comments from DOE-HQ on the Final Report were received on April 21, 1994 and a comment resolution meeting was conducted on April 28, 1994. The revised draft Final Removal Action No. 4 Final Report was transmitted to DOE on May 13, 1994 and subsequently transmitted to the U.S. EPA and Ohio EPA on May 17, 1994.

Planned Activities:

- The U.S. EPA and Ohio EPA will review the Removal Action No. 4 Final Report and provide comments by June 17, 1994.

RA No. 5, K-65 Decant Sump Tank

Current Month:

In an effort to reduce worker exposure to the Decant Sump Tank and to improve confidence in the liquid level measurements, DOE is proceeding to install a submersible pressure indicator/transmitter in the tank. The new water level indicator equipment will allow for accurate, continuous, and remote level readings from the tank.

Planned Activities:

- The action to install the new water level indicator is expected to be completed by the end of June 1994.

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RA No. 7, Plant 1 Pad Continuing Release

Current Month:

The coating operation for Temporary Support Structure (TSS) #6 was completed the week of May 16; Phase C was completed the week of May 23; and Phase D the week of May 30, 1994.

Planned Activities:

- Drum movements will occur during the month of June 1994, allowing construction on Phase E to resume.
- Removal of three existing tension support structures in Phase E will also occur in June 1994.

KEY MILESTONES	STATUS	DUE DATE
Complete Installation of Stage III and Tension Support Structure	Open, behind schedule	February 21, 1995

RA No. 9, Removal of Waste Inventories

Current Month:

The volume of waste shipped off-site in May was 1,805 DEs for a total of 36,085 DEs shipped to the NTS in FY-94. This volume includes 7,047 drums of residues removed from inventory and shipped to-date.

A project team focused on legacy construction waste has characterized and approved for shipment 245 boxes (2,450 DEs). This project is tasked with the characterization of 10 white metal boxes (WMB) per week.

DOE-NV approval of the revised FEMP Application to Ship Waste to the Nevada Test Site, Rev. 5.1, and approval of the FEMP subcontract laboratory audit program was completed in May. This was the final application review element required for DOE-NV approval. The official application approval from DOE-NV which will release the AMCCOM metal for shipment to the Nevada Test Site is expected in June.

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

During June, shipping activities will include the resumption of residue shipments to SEG. These shipments have been delayed pending resolution of the CERCLA Offsite Rule requiring the receiving facility to be on the U.S. EPA Region list of facilities approved to receive waste from a CERCLA site. The rule does not address intermediate process/transfer facilities such as SEG. Both SEG and FERMCO are waiting for U.S. EPA Region IV to issue a position on the status of the SEG facility.

A similar review of the applicability of the CERCLA Offsite Rule to the NTS is also being conducted. The consequences of this review could potentially affect the FEMP approval to ship waste to the NTS.

Planned Activities:

- Awaiting DOE-NV approval of the FEMP waste application.
- Residue shipments to SEG to resume in June 1994.
- Initiation of AMCCOM and thorium shipments will be in June 1994.

KEY MILESTONES	STATUS	DUE DATE
Submit Annual Work Procedures for 1994	Open, on schedule	June 30, 1994

RA No. 12, Safe Shutdown

Current Month:

Of the first three Implementation Plans for the removal of hold-up materials from equipment in Plant 4, the Potassium Hydroxide (KOH) system has been completed except for an area that contained frozen liquid, a Safety Assessment has been completed for the HF Recovery System, and the plan for clean-out of the H₂ off-gas system should be initiated in June. (Safe Shutdown activities were delayed during May due to the stand-down to re-emphasize safe work practices.)

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RA No. 12, Safe Shutdown (continued)

The verification of the production equipment in all process plants has been completed, except for Plants 2/3, Refinery. The red-lining of as-built floor plan drawings to agree with equipment verification is continuing.

The following is the status of capital equipment: of an estimated 1,677 total number of items, 1,183 have been reported on AC-563 Forms to be excessed, and 494 have been identified as "In Use/Future Use" items. This information may vary from month-to-month due to change in status of equipment items and/or as a result of field verification.

Eight hundred seventy-two (872) maintenance work orders to isolate and disconnect all utilities/energy sources from equipment not in use have been prepared. Of these, 460 have been completed. Field verification of the completed orders is ongoing. Completion of these work orders is a preliminary step for removal of hold-up material from the equipment in preparation for equipment removal and decontamination and decommissioning. These numbers may vary from month-to-month due to change in status of the equipment.

Four-hundred thirty-eight (438) task orders to determine if hold-up material is present in equipment have been prepared; of these, 119 have been completed. Also, 121 task orders to remove the hold-up material from equipment have been prepared.

Work continues with Westinghouse Hanford Company, DOE-Richland, and DOE Headquarters in finalizing the "Environmental Assessment (EA) for the Packaging/Repackaging, Loading, and Transportation Associated with the Sale of Uranium Materials Located at the Hanford Site, Richland, Washington, and the Fernald Site, Fernald, Ohio." The preparation of this NEPA document continues to be on hold awaiting details of the type of packaging to be used by COGEMA, the French Company which is purchasing a major portion of the material being sold. Also, the EA is on hold awaiting DOE-HQ's approval to remove from this NEPA document the uranium materials which are being purchased by BNFL, a British company. With DOE-HQ's approval, a separate EA would then be prepared for the material to BNFL.

On May 31, 1994, the fourth shipment of depleted derbies was made to the customer, Manufacturing Sciences Corporation (MSC) in Oak Ridge, Tennessee. We have shipped 404 derbies of 2,613 total, or 149,988 net pounds of 973,651 total.

There was no activity during May in the effort to remove dust collectors for transfer to Martin Marietta Energy Systems (MMES), Oak Ridge, TN, due to the stand-down to re-emphasize safe work practices. This equipment removal is planned to resume in June.

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RA No. 12, Safe Shutdown (continued)

Planned Activities:

- Continue preparation, with Hanford and the DOE, of the NEPA documentation for the sale of the excess uranium materials.
- Continue to issue work orders to disconnect utilities from process equipment and issue task orders to identify and/or remove hold-up materials from process equipment.
- Continue to expedite utility isolation, identify hold-up in equipment, and remove/drum hold-up from process equipment.
- Continue verification of the equipment in Plants 2/3, Refinery, in support of the UNH neutralization program.
- Continue to prepare implementation packages and obtain appropriate approvals. Continue field inspections of implementation activities.
- Continue to follow the status of 4A metal removal to the Nevada Test Site.
- Continue shipping depleted derbies to MSC in Oak Ridge, Tennessee.
- Continue process of removing Plant 5 dust collectors for disposition to MMES, Oak Ridge, Tennessee.

KEY MILESTONES	STATUS	DUE DATE
Submit Annual Work Procedures for 1994	Open, ahead of schedule	June 30, 1994

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RA No. 13, Plant 1 Ore Silos

Current Month:

DOE-FN concurred with changes in the Work Plan for dismantling the tile silos and the U.S EPA has been notified. The new dismantling method involves knocking the tile inward, where they fall into a chute which directs them into a 7a box. The 90% design review for the new method was completed and the Certified For Construction (CFC) drawings were approved in May 1994.

The cones from the concrete silos were removed on May 6, completing the dismantlement of the concrete silos. They are being stored on the west side of the tile silos. The tiles on the southwest silo have been repaired and the installation of scaffolding around the tile silos started in May. Additionally, the removal of miscellaneous equipment from atop the tile silos occurred in May 1994.

Size reduction operation was restarted on May 27, 1994.

Planned Activities:

- Complete removal of the concrete silos structural steel and containment.
- Remove conveyors and platform from top of tall tile silos.
- Remove caps from small tile silos.

KEY MILESTONES	STATUS	DUE DATE
Complete Removal Action	Estimated completion date October 1994	December 19, 1994

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

Current Month:

Verification soil sampling results were received; additional areas of excavation in the off-site property Zone 4 will be identified. Work began on the draft Final Report; however, it was put on hold pending results of planned June activities.

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

Planned Activities:

- Excavate soil in Zone 4 that is in excess of 35pCi/g.
- Collect verification soil samples from the excavated areas within Zone 4.

KEY MILESTONES	STATUS	DUE DATE
Phase V - Submittal of Final Report	Open	September 26, 1994

RA No. 15, Scrap Metal Piles

Current Month:

Phase I FERMCO analysis results of SEG slag and oxides was completed the week of April 8, and data validation was completed by April 28. SEG slag compaction and overpacking was initiated on April 26 and continued through May 1994. The compaction demonstration was completed during NTS audit week, May 23, 1994. Equipment procured by SEG to treat mixed waste streams was received in May.

Phase II Technical Evaluation Cost Proposal was issued to Acquisitions on April 7. Draft of pre-award audit findings was issued to SEG on April 22. Phase II completion/beneficial reuse options were presented to DOE on April 29, 1994. A path forward is being formalized and will be submitted to EPA for approval.

Planned Activities:

- Continue Phase I slag compaction and overpacking of about 100 slag boxes. Continue SEG sampling and analysis of remaining slag/oxides with completion expected June 10, 1994. Continue FERMCO/SEG determination of disposition of mixed waste.
- Receive DOE-NV surveillance report.
- Awaiting responses by FERMCO to questions concerning Phase II completion/beneficial reuse options.

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RA No. 15, Scrap Metal Piles (continued)

KEY MILESTONES	STATUS	DUE DATE
Phase I - On-Site Processing Off-Site Processing	Completed Completed	September 30, 1993 March 25, 1994
Phase I - Submit Final Report	Open, ahead of schedule	September 30, 1994 to U.S. EPA
Phase IIB: Submittal of Subcontractor's Removal Action Plan	Open, behind Schedule	September 30, 1993
Phase IIB: Submittal of Final Report	Open, behind schedule	March 30, 1995

RA No. 17, Improved Storage of Soil and Debris

Current Month:

May activities included preparation of the proposal to delete the Scrap Metal Pad (SMP) tension structure from the RA 17 scope and relocating the Central Storage Facility (CSF) near the OU 5 RD/RA proposed facilities. The proposed changes are a result of the re-evaluation effort involving CRU Integration Strategic Planning efforts. Title II design for the regrading and placement of a vegetative cover over the existing soil and rubble pile north of Third Street continues and Parsons submitted the 50% design package on May 11, 1994 for review and comment. Analysis of samples taken of residues/debris left from the scrap metal previously stored on the SMP is ongoing. The implementation plan for removing these debris/residues was placed on hold due to the "safety standdown" of operations. A CFC design package for the Decontamination Facility Pad (DFP) structure was submitted to Construction on May 9, 1994 for subsequent procurement of subcontractor to perform construction. Preparation of the bid package for the CFC "merged" design package for subsequent transmittal to qualified bidders is on hold due to the re-evaluation efforts for the CSF and SMP structures.

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RA No. 17, Improved Storage of Soil and Debris (continued)

Planned Activities:

- Continue Title II design of the regrading and seeding plan for the existing Third Street soil and rubble pile with a 90% design presentation scheduled for June 27, 1994.
- Removal of the remaining debris/residue in the SMP area planned to restart in June 1994.
- Compile/Develop Bid package for the DFP structure in June for subsequent subcontractor bid period.

RA No. 19, Plant 7 Dismantling

Current Month:

Interior bulk removal work, removal of interior transite and batt insulation, all of which began in March, continued through the month of May 1994. Encapsulant coating was applied to the interior of the exterior transite in the penthouse and on the seventh floor. Additionally, comments on subcontractor submittals were resolved and incorporated and the documents revised.

Planned Activities:

- Continue the application of encapsulant coating to the interior surface of the exterior transite on the lower floors.
- Dismantle and remove exterior structures including pipe racks, tanks, west canopy, bridge crane, and support structures.
- Erect work platforms and bring in crane to begin exterior transite removal at the roof.

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RA No. 20, Stabilization of UNH Inventories

Current Month:

Construction of the new UNH transfer pipe continued. The project schedule has been updated and issued. Maintenance has commenced installing Plidco flange covers to repair several UNH leaks. The procurement of the new progressive cavity pumps for the project is on hold due to the award being contested by the unsuccessful bidder. The continued delay of awarding the pump contract will delay the project schedule.

Planned Activities:

- Continued construction of transfer pipe.
- Continue lab analysis of UNH tank samples.
- Continue bench-scale testing of the UNH to determine the process chemistry.
- Complete repairs of UNH leaks.
- Install blinds and blank flanges on UNH storage tanks.
- Develop operating procedures.

RA No. 26, Asbestos Removals (Asbestos Program)

Current Month:

Ongoing abatements within the Asbestos Program to-date include, small-scale in-situ repairs, encasement, encapsulation, and removals, and the initiation of large-scale asbestos abatement within Plant 7. Design on thermal system insulation removal projects continued in May 1994.

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Removal Actions

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

Planned Activities:

- Receive and resolve comments on the work procedures submittal in support of the Consent Agreement Commitment to provide these procedures to the EPA by June 30, 1994.
- Finalize specification for encapsulation/encasement of deteriorated transite roofing and exterior siding on the Metal Dissolver Building (2D).
- Begin specifying asbestos abatement work to be done in Plant 2/3 Digestion and Extraction.

RA No. 28, Contamination at the Fire Training Facility

Current Month:

The Design Package for field work was completed and Implementation Plan development began. The Health and Safety Plan was completed and received final internal approval signatures. The Design Package for Construction field work is in internal review; comments will be incorporated into the finalized document.

Planned Activities:

- Abandonment and plugging of seven piezometers in the eastern half of the Fire Training Facility so that field work in the area can proceed.
- Finalized Construction Design Package will be submitted to FERMCO Construction department.

RA No. 29, Erosion Control at Inactive Flyash Pile

Current Month:

The final report went through internal review with no comments.

Planned Activities:

None to report.

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Remedial Investigations/Feasibility Studies

1.0 Operable Unit 1

Operable Unit 1 (OU 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 RI/FS Work Plan

Status:

Complete.

Issues/Corrective Actions:

None to report.

1.2 Remedial Investigation

Status:

Received conditional approval of OU 1 Remedial Investigation/Baseline Risk Assessment from U.S. EPA on April 4, 1994. Submitted comment responses and draft proposed change pages for U.S. EPA and Ohio EPA review and approval on May 4, 1994. Comment resolution for final document preparation and approval is in progress.

Issues/Corrective Actions:

None to report.

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Remedial Investigations/Feasibility Studies

1.2 Remedial Investigation (continued)

OPERABLE UNIT 1 REMEDIAL INVESTIGATION REPORT

PRIMARY MILESTONES

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Details the nature and extent of contaminants within the OU 1 study area. Estimates the volume of contaminated media and materials. Provides a baseline risk assessment and establishes remedial action objectives.	10/4/93 A	12/20/93 A	02/04/94 A

C = Consent Agreement Date

A = Actual

* = Request for extension

1.3 Feasibility Study/Proposed Plan

Status:

Received Ohio EPA comments on the draft OU 1 Feasibility Study/Proposed Plan-Environmental Assessment on May 24, 1994. Anticipate receiving U.S. EPA comments on June 1, 1994.

Issues/Corrective Actions:

None to report.

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Remedial Investigations/Feasibility Studies

1.3 Feasibility Study/Proposed Plan (continued)

OPERABLE UNIT 1 FEASIBILITY STUDY/PROPOSED PLAN PRIMARY MILESTONES

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. The Proposed Plan identifies potential remedial alternatives as listed in the FS and presents the preferred alternative to the U.S. EPA and the public.	03/04/94 A	05/24/94 C	06/03/94 C

C = Consent Agreement Date

A = Actual

1.4 Treatability Studies

The OU 1 treatability studies have evaluated several treatment process options identified in the OU 1 Initial Screening of Alternatives document, including cement stabilization, vitrification, thermal treatment, and agglomeration. The FEMP evaluated the technical feasibility of these technologies through a series of laboratory experiments.

Where appropriate, the FEMP investigated performance criteria, including formulation ranges, compressive strength, leachability, bulking factor, and permeability. Cement stabilization binding agents, including portland cement, flyash, blast furnace slag, and sodium silicate, were evaluated. Glass formers and modifiers considered for vitrification were flyash, soil, and sodium hydroxide.

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1.4 Treatability Studies (continued)

Status:

Remedy Screening/Remedy Selection Treatability Studies in support of the OU 1 Remedial Investigation/Feasibility Study are complete. OU 1 treatability studies to support remedy design will be developed as needed based on the Proposed Plan and Record of Decision.

Issues/Corrective Actions:

None to report.

1.5 Record of Decision

Draft OU 1 Record of Decision (ROD) was prepared and submitted to DOE-FN/HQ April 28, 1994, in accordance with the Amended Consent Agreement.

1.6 Planned Activities for June 1994

- Continue preparing comment responses and proposed change pages for the draft Final OU 1 Feasibility Study/Proposed Plan-Environmental Assessment (FS/PP-EA).

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2.0 Operable Unit 2

Operable Unit 2 (OU 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 RI/FS Work Plan Addendum

DOE-FN submitted the Remedial Investigation Report for OU 2 to the U.S. EPA and Ohio EPA in October 1992. Based on December 17, 1992, review comments from the U.S. EPA and Ohio EPA on the RI Report and subsequent disapproval of the document, OU 2 required a second phase of Remedial Investigation sampling and analysis in order to meet the objectives of the March 1988 RI/FS Work Plan.

Status:

Complete.

Issues/Corrective Actions:

None to report.

2.1.1 RI Field Investigation

Status:

Analysis of Round Two sample collections of monitoring wells was completed in May 1994.

Issues/Corrective Actions:

None to report.

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2.2 Remedial Investigation

Status:

Formal comments on the February submittal of the OU 2 Draft Remedial Investigation (RI) Report were received from the Ohio EPA and U.S. EPA on April 19 and April 22, 1994, respectfully. Comments are being reviewed and responses are being incorporated into the document. A 20 day extension was requested targeting June 15, 1994 as the submittal date. A Comment Response Document is being compiled and will be submitted with the revised draft RI.

Issues/Corrective Actions:

None to report.

OPERABLE UNIT 2 REMEDIAL INVESTIGATION REPORT

PRIMARY MILESTONES

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Details the nature and extent of contaminants within the OU 2 study area. Estimates the volume of contaminated media and materials. Provides a baseline risk assessment and establishes remedial action objectives.	02/18/94 C	04/22/94 C	06/15/94 C (due to extension)

C = Consent Agreement Date

2.3 Feasibility Study/Proposed Plan

Status:

DOE Comments to the Feasibility Study were incorporated and the revised draft was submitted to EPA on April 28, 1994. Meetings with U.S. EPA and Ohio EPA were held on May 16, and 19, 1994. The major current modification is to address the potential for joint private ownership and federal control of the site.

Issues/Corrective Actions:

None to report.

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Remedial Investigations/Feasibility Studies

2.3 Feasibility Study/Proposed Plan (continued)

OPERABLE UNIT 2 FEASIBILITY STUDY/PP REPORT

PRIMARY MILESTONES

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Describes and analyzes potential remedial alternatives. A comparative analysis will be performed for all alternatives. The Proposed Plan identifies potential remedial alternatives as listed in the FS and presents the preferred alternative to the U.S. EPA and the public.	04/29/94 C	06/27/94 C	07/25/94 C

C = Consent Agreement Date

2.4 Treatability Studies

Status:

None to report.

Issues/Corrective Actions:

None to report.

2.5 Planned Activities for June 1994

- Complete analysis of geotechnical samples from the Solid Waste Landfill.
- Complete engineering specifications and work plan for maintenance activities for the Active Flyash Pile.
- Comments from EPA on the Revised Draft FS Report, are expected by June 26, 1994.
- Submittal of the revised Draft OU 2 RI Report and Response to Comments document.

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Remedial Investigations/Feasibility Studies

3.0 Operable Unit 3

Operable Unit 3 (OU 3), as defined in the Amended Consent Agreement, includes the Production Area and production-associated facilities and equipment (including all above-and below-grade improvements) including all structures, equipment, utilities, drums, tanks, solid waste, waste, product, thorium, effluent lines, K-65 transfer lines, waste water treatment facilities, fire training facilities, scrap metal piles, feed stocks, and coal pile.

3.1 RI/FS Work Plan

Status:

Nine Field Work Packages (FWPs) were completed, approved, and distributed in May 1994 with the sampling identified therein, encompassing a large extent of the samples anticipated to be taken in the next couple months of OU 3 RI/FS sampling.

Issues/Corrective Actions:

None to report.

3.1.1 Field Investigations

Scope:

The Operable Unit 3 Field Investigations Program gathers information necessary to perform a baseline risk assessment. The program also identifies the nature of contaminants in the operable unit, refines estimates of volume of contaminated materials, and supports initial screening of applicable alternatives.

Status:

Field screening for chemical and metals contamination continued throughout May, using two field portable X-Ray fluorescence analyzers, a field portable gas chromatograph, and photo-ionization detectors. Chemical screening was performed to support selection of intrusive media locations in the Fire Training Center Building, Plant 1 Pad Storage Shelter, Drum Storage Building, Plant 6 Electrostatic Precipitator, Old Decontamination Building, NFS Storage and Pump House, and Electrical Substation.

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Remedial Investigations/Feasibility Studies

3.1.1 Field Investigations (continued)

Intrusive media sampling was initiated in the Methanol Tank, Plant 8 Old Metal Dissolver Pad, General Sump, Electrical Panels & Transformers, Cold Side Ore Conveyor, Utility Trench, Plant 6 Covered Storage Area, Chemical Warehouse, Engine House/Garage, Cooling Towers, Plant 9 Dust Collector, Combined Raffinate Tanks, Hot Side Ore Conveyor, High Nitrate Storage Tank, Drum Reconditioning, Main Electrical Substation, Conveyor Tunnel from Plant 1, and High Nitrate Tank. Intrusive media sampling continued in the Waste Oil Decant Shelter, Trickling Filters, Sludge Drying Beds, Pilot Plant Dissociator Shelter, Storm Water Retention Basin, Mag Storage Covered Loading Dock, and Primary Settling Basins. A total of 76 intrusive samples were collected in May 1994.

The remaining samples for Task Order 3 against the Radioanalytical Laboratory Services Task Order Subcontract (all liquid) were shipped to Datachem Laboratories in May 1994. Shipment of samples for Task Order 4 to TMA/Eberline, began in early May and should be completed in June. Task Orders 5, 7, and 8 were awarded to Core Laboratories in May, although shipment of the associated samples is suspended due to radiological safety problems at the lab. Shipment of these samples to Core laboratories is expected to begin in late June 1994. Task Order 9 went out for bid in late May and is expected to be awarded in early June 1994. Task Orders 10, 11 and 12 are expected to go out for bid in late June 1994.

Issues/Corrective Actions:

The CRU3 RI/FS Field Investigations program curtailed sampling operations in compliance with the Site Safety Awareness operations shutdown May 2-13, 1994. For the week of May 2-6, 1994, 24 intrusive media samples were scheduled but no samples were taken. CRU3 RI/FS administrative and sampling personnel participated in Site Safety Awareness Days. For the week of May 9-13, 1994, 31 samples were scheduled but only 11 collected. Loose media and liquid samples were cleared for collection by FERMCO management by definition of being a "low-risk activity." Concrete and paint chip samples were collected one day to enable the safety review committee to view the field operation requiring their review. The program received clearance to resume normal operations on May 14, 1994. Sampling resumed May 16, 1994.

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3.1.1 Field Investigations (continued)

Various problems are being encountered relative to securing radioanalytical laboratory capacity, shipment of samples to these labs, and analysis of samples, which could impact the schedule for the receipt of data. Laboratory capacity is a concern because, of the labs which are currently available (i.e., have passed their audit(s) and/or have submitted the required SCQ information), two already have or are expected to get a large number of samples, and others are not bidding, or are currently unavailable due to other reasons. The focus, therefore, is currently on bringing some of the other five laboratories listed under the Rad Basic Order Agreement, that are not approved to analyze FERMCO samples at this time, on-line by the end of June 1994 to meet the OU 3 RI needs. The recent award of a number of task orders has also resulted in potential difficulties in shipping due to lack of personnel to log in and package these samples, although possible solutions are being sought. Finally, questions have arisen concerning the Minimal Detectable Concentration (MDC) equation being used by the laboratories to calculate detection limits. Efforts are under way to evaluate the MDC calculation and determine whether the equation is correct or needs modification.

3.2 Remedial Investigation

OPERABLE UNIT 3 REMEDIAL INVESTIGATION REPORT

PRIMARY MILESTONES

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Details the nature and extent of contaminants within the OU 3 study area. Estimates the volume of contaminated media and materials. Characterizes contamination in the former production area and establishes remedial action objectives.	03/13/96 C	05/12/96 C	06/11/96 C

C = Consent Agreement Date

Status:

Formal development of the RI has begun in the form of report planning, RI Report layout, Baseline Risk Assessment Report layout, non-data dependent background information collection/integration, and Baseline Risk Assessment approach and scenario development. A revised schedule and cost savings for the RI is being evaluated based upon the DOE proposal to eliminate the Baseline Risk Assessment. Data management procedures have been implemented to track and manipulate field characterization data. As of May 20, 1994, approximately 63% of the chemical field

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3.2 Remedial Investigation (continued)

characterization analytical data and 1% of the radiological field characterization analytical data have been received from the laboratories. Approximately 45% of planned chemical data to be collected has been validated.

Issues/Corrective Actions:

None to report.

3.3 Feasibility Study/Proposed Plan

Status:

OU 3 has not begun formal activities on the Feasibility Study, although alternatives research, initial screening, and document layout planning have been initiated. Based upon a DOE proposal to EPA to eliminate the OU 3 Baseline Risk Assessment (BRA), the schedule for the FS is being evaluated for potential acceleration and cost savings. An innovative approach which would combine the OU 3 and OU 5 FS and subsequent RI/FS documents is being considered for proposal. As a result of the development of a Proposed Plan for Interim Action, the Feasibility Study will not address initial decontamination or dismantling, but will focus on treatment and disposition issues, which remain the scope of the final action and final Record Of Decision.

OPERABLE UNIT 3 FEASIBILITY STUDY/PP REPORT PRIMARY MILESTONES

Table with 4 columns: SCOPE, SUBMIT TO EPA, RECEIVE FROM EPA, SUBMIT TO EPA FINAL. Row 1: Describes and analyzes potential remedial alternatives... 04/12/96 C, 08/07/96 C, 11/05/96 C

C = Consent Agreement Date

Issues/Corrective Actions:

None to report.

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3.4 Treatability Studies

Status:

The FEMP will conduct remedy screening treatability studies in parallel with the field investigation and alternatives development. OU 3 has developed a Treatability Study Work Plan (TSWP) to include initially-identified studies to be performed. Current actions involve planning the initial studies. The TSWP was submitted to the U.S. EPA on December 22, 1993, ahead of the scheduled January 15, 1994 due date. U.S. EPA approval was received April 13, 1994 for the TSWP. Additional tests will be planned and submitted as addenda to the TSWP, once identified and detailed. Contracting activities are well underway for initially identified tests. Additional small-scale demonstration tests are also being planned.

Issues/Corrective Actions:

None to report.

3.5 Interim Action - Record of Decision

Status:

The Proposed Draft IROD (with Draft Responsiveness Summary) was approved by the U.S. and Ohio EPAs with comments on May 10 and May 9, 1994, respectively. A revised final version of the IROD was submitted for DOE-HQ sign-off on May 26, 1994. This version was also transmitted to the EPAs with a detailed comment-response package. The NEPA FONSI for the action was also completed.

Issues/Corrective Actions:

None to report.

3.6 RD/RA Work Plan

The Interim RD/RA Work Plan will detail how design activities will be performed to meet the scope of the interim remedial action for facility decontamination and dismantlement, and how this design will then be implemented through the remedial action program.

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3.6 RD/RA Work Plan (continued)

Status:

The RD/RA Work Plan was revised and informally submitted to internal DOE on May 18, 1994, for acceptability of the document as a whole in addressing comments on the March 15, 1994 draft. Additional copies of the Work Plan were provided on May 19, 1994, initially for informal review by DOE-HQ, although it was later decided that this submittal would suffice as the formal submittal for DOE-HQ review, with comments expected from DOE-HQ in mid-June. DOE-FN notified FERMCO in a letter dated May 25, 1994 of its continued concerns on the content of the RD/RA Work Plan, and its expectations in revising the OU 3 RD/RA Work Plan for the Interim Action. In response to this letter, the DOE and FERMCO have begun additional dialog to determine the most appropriate path forward in revising the Work Plan.

Issues/Corrective Actions:

None to report.

3.7 Planned Activities for June 1994

- A community roundtable on the OU 3 RD/RA for the Interim Remedial Action is scheduled for June 2, 1994. The focus will be on activities that have occurred since the public meeting for the proposed plan on the OU 3 IROD, the RD/RA process in general (and the potential differences in approach to RD/RA by the OUs), public involvement post-ROD, and the status of specific planning activities. These planning activities include decontamination and dismantlement sequencing, decontamination and dismantlement methodology, and environmental monitoring.
- Obtain DOE and U.S. EPA sign-off on the Interim Action Record of Decision (IROD). Obtain Ohio EPA letter of concurrence to satisfy public request.
- Based on expected receipt of DOE-HQ comments on the RD/RA Work Plan in mid-June, begin efforts to address those comments through a formal response mechanism and/or through revisions to the Work Plan. Continue efforts in revising the RD/RA Work Plan for planned submittal to the EPAs within 60 days of signature of the IROD.
- Determine OU 3 FS strategy with DOE and EPA and initiate execution of FS tasks.

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3.7 Planned Activities for June 1994 (continued)

- Receive Vitrification Treatability Study Best and Final Offer (BAFO) bids from vendors.
- Continue efforts to complete the shipment of samples under the fourth Task Order against the Radioanalytical Laboratory Services Task Order Subcontract. Begin shipment of samples under the fifth, seventh, and eighth Task Order.
- Continue efforts to support the placement of the ninth, tenth, eleventh, and twelfth radiological task orders in June/July, with possible shipment of samples for radioanalytical analysis beginning in June/July.
- Continue writing Field Work Packages (FWPs). It is anticipated that about 15 - 20 FWPs will be reviewed and approved in June 1994.

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4.0 Operable Unit 4

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

4.1 RI/FS Work Plan

Status:

Complete.

Issues/Corrective Actions:

None to report.

4.2 Remedial Investigation

Status:

The OU 4 Remedial Investigation Final Report was transmitted to the U.S. EPA on October 29, 1993. Ohio EPA approved the document on November 23, 1993. U.S. EPA conditionally approved the RI on January 6, 1994. However, DOE received subsequent comments on the Baseline Risk Assessment portion of this report from the U.S. EPA Region V. Revisions to the OU 4 Remedial Investigation Final Report were issued during February 1994.

Issues/Corrective Actions:

Three additional comments on the OU 4 Remedial Investigation Final Report were received from U.S. EPA on April 27, 1994. Responses and changed pages were transmitted to U.S. EPA on May 27, 1994.

4.3 Feasibility Study/Proposed Plan

Status:

The DOE received U.S. EPA conditional approval of the Operable Unit 4 Final Feasibility Study Report/Proposed Plan on May 10, 1994 pending satisfactory resolution of five concerns related to the FS risk assessment. Draft responses to these concerns have been reviewed by DOE and will be submitted to the U.S. EPA and Ohio EPA on or before June 10, 1994.

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4.3 Feasibility Study/Proposed Plan (continued)

At the request of the public, the public review period for the Operable Unit 4 Feasibility Study/Proposed Plan - Draft Environmental Impact Statement has been extended twice, for a total of sixty days. The public review period will be completed on June 19, 1994.

Issues/Corrective Actions:

None to report.

OPERABLE UNIT 4 FEASIBILITY STUDY/PP REPORT

PRIMARY MILESTONES

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. The Proposed Plan identifies potential remedial alternatives as listed in the FS and presents the preferred alternative to the U.S. EPA and the public.	09/10/93 C 09/09/93 A	11/10/93 C 11/12/93 A	12/28/93 C 12/21/93 A

C = Consent Agreement Date
A = Actual Date

4.4 Treatability Studies

4.4.1 Bench Scale Treatability Studies

A Treatability Study Work Plan addresses the additional information that is required to support the FS and subsequent remedy selection for OU 4. There are two separate treatability studies to support the OU 4 FS. One study considers cement stabilization of Silos 1, 2, and 3 material and chemical extraction, leachate precipitation, and leachate stabilization of Silos 1 and 2 material. The second treatability study considers the vitrification of Silos 1, 2, and 3 material.

Status:

Complete.

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4.4 Treatability Studies (continued)

4.4.2 Pilot Plant Treatability Studies

A two phase Pilot Plant Treatability Study is being conducted to develop the design of facilities and equipment for the final remediation of Operable Unit 4. Phase I will utilize bentonite and surrogate materials, the pilot plant scale vitrification facility, and the empty Silo 4 as a test bed for demonstrating both vitrification and waste retrieval technologies. Phase II will utilize bentonite, actual K-65 and Silo 3 materials retrieved from the silos in addition to treating radon gas. A work plan will be developed for each phase.

Status:

Comments received on The Pilot Plant Phase I Work Plan from U.S. EPA have been responded to and the impacts have been incorporated into the Pilot Plant Phase II Work Plan.

The Pilot Plant Phase II Work Plan was submitted to U.S. EPA on May 11, 1994. U.S. EPA comments are due back on June 28, 1994.

The Preliminary Safety Analysis Report for Operable Unit 4 was submitted to DOE-HQ for review. Comments were received on May 5, 1994.

Approval to begin construction was received June 1, 1994 from DOE-FN. Construction of the Pilot Plant facility is expected to be started in June 1994.

Pilot Plant Phase I Operations are projected to begin in March 1995.

Issues/Corrective Actions:

The March 1994 report indicated elevated levels of radon recorded at the K-65 Silos exclusion zone fence line during the period of February 15-18, 1994. Further investigation has concluded that these elevated levels of radon may be attributable to a radon release which occurred during the performance of radon adsorption tests in the K-65 area in support of future Operable Unit 4 Pilot Plant operations. During the performance of these tests, severe meteorological inversion conditions persisted at the site which exacerbated the problem. These radon adsorption tests were completed in February 1994. Future radon adsorption will be conducted under a revised work plan which specifies a redesigned test system configuration and revised test procedures to preclude a reoccurrence of this event.

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4.5 Record of Decision

Status:

The proposed draft Record of Decision for Operable Unit 4 was submitted to DOE-HQ on May 27, 1994 for final review and comments. Because of the sixty day schedule extension to the OU 4 Feasibility Study/Proposed Plan - Draft Environmental Impact Statement public review period, the Amended Consent Agreement submittal date for the draft ROD has been extended by the U.S. EPA until August 9, 1994.

DOE-HQ comments on the proposed draft Record of Decision (ROD) for OU 4 were received on March 29, 1994. The comment responses are being prepared and incorporated into the Proposed Draft Record of Decision for OU 4. The revised Proposed Draft Record of Decision for OU 4 was submitted to DOE-HQ on April 11, 1994. Final DOE-HQ comments were resubmitted May 2, 1994.

4.6 Planned Activities for June 1994

- Conclude public review period for the Feasibility Study Report and Proposed Plan for Remedial Action at OU 4 on June 19, 1994
- Prepare Draft Responsiveness Summary on the comments received from the public review of the Feasibility Study Report and the Proposed Plan for Operable Unit 4.
- Revise the Proposed Draft Record of Decision based on the DOE and public comments.
- Begin construction of the Phase I Pilot Plant facility.

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5.0 Operable Unit 5

Operable Unit 5 (OU 5), as defined in the Amended Consent Agreement, includes: groundwater, surface water, and soil not included in the definitions of Operable Units 1 through 4, sediment, flora and fauna.

5.1 Remedial Investigation

Status:

Work on the draft Remedial Investigation (RI) Report continues, preparatory to its submittal to EPA on June 24, 1994.

- The conceptual approach for describing the geochemical interactions within FEMP site soil was defined.
- Geochemical inputs to the fate and transport model were finalized.
- Statistics from the verified and validated database were calculated and interpreted.
- Plates, figures and graphics (about 400) were reviewed and critiqued before going into final drafting.
- Revisions to Sections 1, 2, and 3 are near completion. The revisions were based on internal comments on the February 24 draft.

Operable Unit 5's response to questions raised by U.S. EPA regarding the Screening Level Ecological Risk Assessment (SLERA) was finalized and transmitted by DOE to U.S. EPA on May 25 for review/approval. Once approved, the DOE will not revise the SLERA; however, the comment responses must be incorporated into the Site-Wide Ecological Risk Assessment which will be Appendix B in the OU 5 RI Report.

The draft final report, "Characterization of Background Water Quality for Streams and Groundwater," dated May 1994, is undergoing a final quality assurance review and will be available for distribution in early June 1994. The revised document will reflect the finalized data and incorporate DOE's responses to U.S. EPA's comments on the May 1993 draft of the report.

Issues/Corrective Actions:

None to report.

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5.1 Remedial Investigation (continued)

OPERABLE UNIT 5 REMEDIAL INVESTIGATION REPORT

PRIMARY MILESTONES

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Details the nature and extent of contaminants within the OU 5 study area. Estimates the volume of contaminated media and materials. Provides a baseline risk assessment and establishes remedial action objectives.	06/24/94 C	08/23/94 C	09/22/94 C

C = Consent Agreement Date

5.2 Feasibility Study/Proposed Plan

Status:

Additional krieging runs were completed to support volume estimates for excavating soil and sediment to attain proposed remediation levels. The krieging runs have identified that excellent horizontal controls exists to support krieging based on the approximate 5000 surface soil samples collected at the site and analyzed for total uranium. The krieging runs also identified significant uncertainty in the interpolation of the vertical extent due to the existence of more limited data. For purposes of the FS, more than 5000 surface blocks from the solid block model were individually reviewed and vertically bounded on the basis of available data. This vertical bounding is used to provide an equivalent basis for evaluation of remedial alternatives. Final volumes and footprints of excavation have been established using total uranium for each alternative. FS risk assessments will be completed for each alternative employing all Contaminants of Concern (COCs) to verify that the uranium footprint can be used as the footprint.

Peer review has been completed on drafts of Sections 1 and 2. These sections are presently being revised. Section 3 (Initial Screening) is undergoing final editing prior to peer review. Section 4 (Detailed Analyses) is in preparation and is approximately 25 percent complete.

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5.2 Feasibility Study/Proposed Plan (continued)

Component cost estimates are in preparation and are presently 75 percent complete. Final alternative cost estimates will be assembled in mid-June.

The ARAR appendix is approximately 50 percent complete and is anticipated to be completed in mid-June.

Issues/Corrective Actions:

None to report.

OPERABLE UNIT 5 FEASIBILITY STUDY/PP REPORT

PRIMARY MILESTONES

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Describes and analyzes potential remedial alternatives. A comparative analysis will be performed for all alternatives. The Proposed Plan identifies potential remedial alternatives as listed in the FS and presents the preferred alternative to the U.S. EPA and the public.	11/16/94 C	01/15/95 C	02/14/95 C

C = Consent Agreement Date

5.3 Treatability Studies

The current treatability study activities are focusing on support of the OU 5 FS Report, specifically the development of the Treatability Appendix. In addition, bench testing activities at the FEMP are providing data in support of remedial design issues.

Status:

Analytical data from contracted laboratory analyses for the COC testing has been incorporated into the Sitewide Environmental Database (SED). This data is currently being incorporated into the treatability study report for the OU 5 FS. Data validation has been essentially completed for all contracted laboratory analyses for all other treatability data. The incorporation of OU 5 FS treatability data in the SED is one of the first utilizations of the SED for data other than RI data. The structuring of a treatability database in the Oracle-based SED has provided DOE a template for a database structure on a national basis.

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5.3 **Treatability Studies (continued)**

Additional laboratory testing to support the soil washing process alternative is targeting recycling and regeneration of carbonate solutions. Other testing is being conducted in an effort to enhance the physical separation side of the soil washing process. These efforts are focusing on characterizing those additional nine soils (used in COC testing) with respect to uranium concentration and grain size distribution. Enhancing the physical separation side of the process could significantly reduce process operational cost by providing a volume reduction of 20 to 30 percent during the initial processes in the soil washing system.

Issues/Corrective Actions:

None to report.

5.4 **Planned Activities for June 1994:**

- Submit Characterization of Background Water Quality for Streams and Groundwater" report to the EPAs in early June.
- Complete text, tables, and figures for the draft RI Report to meet the Consent Agreement submittal date to EPA (June 24, 1994).

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6.0 Community Relations

Status:

On May 3, a stakeholder alignment session was held at the ERA-Alpha Building at 7:00 p.m. Members of the Fernald Citizens Task Force and FRESH were briefed on the framework for strategic planning and were invited to participate in drafting the plan at Fernald. As key stakeholders in decisions about the future of Fernald, DOE, FERMCO, and subcontractor employees are also encouraged to participate in the development of the Fernald Strategic Plan. Strategies will be developed for the following areas as part of the strategic plan: Safety, stakeholder involvement, work force restructuring, site restoration, waste disposal, technology development, contracting, and DOE organizational roles and responsibilities. The appropriate DOE and FERMCO managers within each of these areas will work with interested stakeholders to develop their strategies, which will be incorporated in the draft Fernald Strategic Plan. The goal is to have a draft plan completed for review by June 1, 1994.

As part of the 1994 Community Assessment to revise the Community Relations Plan, 50 community leaders including local residents, members of FRESH and the Fernald Citizens Task Force, civic leaders, businessmen, local, state and federal officials, were interviewed during May. Additionally, 365 random telephone interviews were conducted. The purpose of the community assessment is to evaluate the effectiveness of Fernald's communications programs and determine new or better approaches for informing and involving the public. To delineate community issues and concerns raised during the assessment and to identify new or revised public involvement programs to address the issues and concerns, a workshop was held May 20; participants included Gary Stegner and Ken Morgan, DOE; Cheryl Allen, U.S. EPA; Laura Hegge, Ohio EPA; and FERMCO staff.

The DOE Fernald Envoys held their monthly meeting on May 4, 1994. At this meeting the envoys were briefed on the safety stand-down, the 1994 Joint Response Exercise, and the strategic planning process.

On May 9 and May 12, U.S. EPA and Ohio EPA conditionally approved the *Operable Unit 3 Record of Decision for the Interim Remedial Action (IROD)*. Approval of this IROD will allow the Fernald site to begin the remediation of the former production area.

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6.0 Community Relations (continued)

On May 9, 1994, DOE received correspondence from U.S. EPA, approving the *Final Feasibility Study Report/Proposed Plan-Draft Environmental Impact Statement (FS/PP-DEIS)* for Operable Unit 4, pending satisfactory incorporation of responses to remaining U.S. EPA risk assessment concerns. The documentation is available at the Public Environmental Information Center, 10845 Hamilton-Cleves Road, Harrison, Ohio.

On May 10, 1994, DOE held a public workshop to discuss the findings and conclusions of the Operable Unit 2 Remedial Investigation Report. Using an advanced technology called Solid Block Modeling, the presentation focused on the sampling program and data findings of the five subunits that make up Operable Unit 2. The total attendance was 31 including representatives from Ohio EPA and approximately 11 from the general public. All questions asked by the public during the Question and Answer Session were adequately answered and the next day the responses were typed and mailed to those in attendance from the public. A copy was also placed in the Public Environmental Information Center, 10845 Hamilton-Cleves Road, Harrison, Ohio, along with the sign-in sheets, agenda, handouts, and completed evaluation forms.

The Fernald Citizens Task Force held its regular monthly meeting on May 14, 1994, at the AmeriSuites Hotel in Forest Park, Ohio. About 21 members of the public, other agencies, DOE, and FERMCO observed. The Task Force played *FutureSite*, a learning exercise that allowed Task Force members to explore various future use scenarios. The exercise illustrates the volumes of contaminated soil that must be handled in achieving alternative uses of the Fernald site. The objective is to determine a desired future use of the entire site and account for all of the contaminated material in either off-site or on-site disposal. The next regular meeting of the Task Force is scheduled for June 11, 1994, at the AmeriSuites in Forest Park, Ohio.

On May 11, 1994, DOE-FN made a presentation on the Operable Unit 4 Feasibility Study and Proposed Plan to the Community Advisory Board (CAB) for the Nevada Test Site. As a result, the CAB requested a second 30-day extension of the Operable Unit 4 formal public comment period and U.S. EPA concurred. The Operable Unit 4 formal public comment period was scheduled to conclude May 20, 1994; however because of the second extension, it will now officially end July 19, 1994.

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6.0 Community Relations (continued)

DOE-FN representatives attended the monthly FRESH meeting on May 26, 1994. Approximately 25 residents attended. Rod Warner, DOE-FN, was a special guest speaker invited to discuss DOE's consideration to import and conduct treatability studies on three barrels of contaminated soil from the DOE site in Portsmouth, Ohio. Also on the agenda at FRESH's request: Bill Murray, National Institute for Occupational Safety and Health (NIOSH); L. F. Bell, Agency for Toxic Substances and Disease Registry (ATSDR); and Paul Garbe, Centers for Disease Control and Prevention, National Center for Environmental Health. The following topics were included in the briefing given by DOE-FN:

- The second 30-day extension of the Operable Unit 4 Proposed Plan Public Comment Period.
- Fernald's Strategic Plan and the eight areas that make up the framework of the plan.
- Update on the Community Assessment that involved interviewing over 50 stakeholders.
- Updates on the Uranium Soils Integrated Demonstration projects to be conducted at Fernald.

Issues/Corrective Action:

None.

6.1 Planned Activities for June 1994

- On June 1, 1994 the Centers for Disease Control and Prevention will hold a meeting to discuss progress on the dose reconstruction project. The meeting will begin at 7 p.m. at the Springdale Sheraton.
- A community roundtable will be held June 2, 1994 at the Alpha Building, to discuss the Remedial Design/Remedial Action process being proposed to implement the Operable Unit 3 interim remedial action.

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6.1 Planned Activities for June 1994 (continued)

- On June 6, 1994 the Fernald site's natural resource trustees will hold their first workshop at the site. The meeting is being held to establish how the trustees plan to work together in the future. Trustee representatives from the U.S. Department of Interior, Ohio EPA and DOE are expected to attend the workshop.
- On June 9, 1994 beginning at 6 p.m., at the Meadowbrook Inn, Ross, Ohio, the Fernald Citizens Task Force will hold its first public meeting to receive input from the general public. There will be a brief presentation on the task force, but the main activity will be to play the future use exercise, *FutureSite*, and solicit input about potential future use options.
- On June 11, 1994 the Fernald Citizens Task Force will meet from 8:30 a.m. until noon, at AmeriSuites, in Forest Park.
- The next DOE RI/FS Community Meeting will be held June 14, 1994 at the Plantation in Harrison, Ohio. Exhibits open and an Availability Session will begin at 6 p.m. Break-out sessions will cover Strategic Planning and Waste/ Material Disposition. Updates from U.S. EPA and Ohio EPA are on the agenda.
- The next regular meeting of FRESH will be June 23, 1994 at the Venice Presbyterian Church in Ross, Ohio beginning at 7:30 p.m.
- DOE will be hold a public workshop on the Operable Unit 2 FS on June 28, 1994 at the Alpha Building, 10967 Hamilton-Cleves Highway, Classroom D, beginning at 7 p.m.

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ENCLOSURE A

**WASTE WATER FLOWS AND RADIONUCLIDE
CONCENTRATIONS UNDER CA SECTION XXIII.B**

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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 waste water flows, radionuclide concentrations, and loadings released to the Great Miami River and an estimate of runoff and radionuclide concentrations to Paddy's Run during May 1994.

Summary - May 1994

The total quantity of uranium discharged from the FEMP to the Great Miami River via Manhole 175 (Outfall 11o00004001) was 18.13 kilograms. The average uranium concentration for the previous 12 months was 0.37 mg/L. This is 41.6 % of the Derived Concentration Guide (DOE Order 5400.5) for ingested water.

There was no discharge from the Storm Water Retention Basin Spillway (Outfall 11o00004002) to Paddy's Run via the Storm Sewer Outfall Ditch in May 1994. Based on 2.26 inches of rainfall in May 1994, the total quantity of uranium discharged to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 6.42 kilograms.

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EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: 11000004001
001 Total Discharge
Manhole 175 (Effluent to Great Miami River)

DATE: MAY 1994

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	0.440	991	261	1.60	2.66	541
2	0.324	676	279	1.30	1.59	439
3	0.239	766	396	1.50	1.36	507
4	0.236	721	351	1.40	1.25	473
5	0.280	450	279	0.97	1.03	328
6	0.239	541	234	0.96	0.87	324
7	0.276	401	176	0.74	0.77	250
8	0.254	252	158	0.57	0.55	193
9	0.225	369	257	0.61	0.52	206
10	0.236	275	221	0.56	0.50	189
11	0.240	279	225	0.44	0.40	149
12	0.282	203	194	0.39	0.42	132
13	0.227	365	261	0.75	0.64	253
14	0.173	203	144	0.33	0.22	111
15	0.216	77	140	0.22	0.18	74
16	0.256	95	77	0.23	0.22	78
17	0.243	207	198	0.48	0.44	162
18	0.251	54	59	0.16	0.15	54
19	0.227	77	59	0.15	0.13	51
20	0.208	41	77	0.10	0.07	32
21	0.174	68	81	0.21	0.14	71
22	0.199	**	72	0.27	0.20	91
23	0.257	**	90	0.25	0.24	84
24	0.291	**	77	0.23	0.25	78
25	0.242	**	**	0.59	0.54	199
26	0.251	**	**	0.76	0.72	257
27	0.228	**	**	0.49	0.42	166
28	0.172	**	**	0.56	0.36	189
29	0.212	**	**	0.58	0.47	196
30	0.153	**	**	0.65	0.38	220
31	0.241	**	**	0.47	0.43	159
Total	7.492				18.13	

** Analytical results not yet available.

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EFFLUENT RADIATION REPORT (cont.)

FACILITY: Fernald Environmental Management Project

LOCATION: 001 Total Discharge

DATE: MAY 1994

	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.	0.242	263	150	0.64	0.58	216
Max.	0.440	991	396	1.60	2.66	541
Min.	0.153	41	59	0.10	0.07	32

The average uranium concentration for the previous twelve months was 0.37 mg/l. This is 41.6 percent of the Derived Concentration Guide(DOE Order 5400.5) for ingested water.

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

(2) Average values presented are flow-weighted.

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EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: 11G00004002
002 Discharge (Overflow) to Storm Sewer Outfall Ditch
Stormwater Retention Basin Spillway (Effluent to Paddy's Run)

DATE: MAY 1994

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

Based on 2.26 inches of rainfall for the month, the uranium discharge to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 6.42 kgs.

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ENCLOSURE B

FFCA: INITIAL REMEDIAL MEASURES

AND OTHER OPEN ACTIONS

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INTRODUCTION

Enclosure B describes actions undertaken at the FEMP during the period May 1, through May 31, 1994, that are not covered by the reporting requirements of the Consent Agreement As Amended under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 120 and 106(a).

WORK ASSIGNMENTS AND PROGRESS

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

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

1. Initial Remedial Measures

Section C

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

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

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

3. Reports and Record Keeping

Section B

The RI/FS Monthly Technical Progress Report for March 1994 was transmitted to the U.S. EPA on April 18, 1994, 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.

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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

This information will now be submitted on an annual basis as part of the FEMP Site Environmental Report.

REPORTING REQUIREMENTS

Section B

The Federal Facility Compliance Agreement Monthly Progress Report for April 1994, was transmitted to the U.S. EPA on May 20, 1994, 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**

MAY 31, 1994

<u>ACTION</u>	<u>DESCRIPTION</u>	<u>COMPLETION TIME AFTER FFCA SIGNED</u>	<u>FY1994 STATUS</u>
CERCLA			
1.	INITIAL REMEDIAL MEASURES		
1.C	Implement radon control plan approved by the U.S. EPA.	----	No longer applicable. Progress on actions to address radon emissions from the K-65 Silos are being reported separately under Section IX-Removal Actions of the Consent Agreement/FFCA Monthly Progress Report.
2.	REMEDIAL INVESTIGATION/FEASIBILITY STUDY.		No action required.
2.A	RI/FS work is to be conducted in accordance with the U.S. EPA guidelines.	N/A	
2.B	--No Action Required--	----	Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a).
2.E	Amend and submit revised RI/FS Work Plan to U.S. EPA if deficiencies are found.		Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a).
2.F	Implement tasks described in the approved RI/FS Work Plan		Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA sections 120 and 106(a).
3.	REPORTS AND RECORD KEEPING		
3.B	Submit monthly RI/FS progress reports.	monthly	The RI/FS Monthly Progress Report for April 1994 was transmitted to the U.S. EPA on May 20, 1994.

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

MAY 31, 1994

CLEAN AIR ACT

B.4	Prepare annual progress report installation and replacement of emission control devices.	yearly	The Sixth Annual Progress Report on the installation and replacement of emission control devices is being prepared by the Effluent Monitoring and Control Section of the ES&H Division. The report will be transmitted to DOE in June, 1994.
C.	Provide annual reports to the U.S. EPA per 40 CFR 61.94(c).	yearly	The Annual NESHAP Compliance Report for CY1992 was transmitted to the U.S. EPA on June 28, 1993 (DOE-2281-93).
D.1	Provide U.S. EPA with yearly stack-testing schedule.	yearly	<p>No stacks related to production were operating in 1993.</p> <p>Periodic confirmatory measurements to demonstrate compliance with NESHAP Subpart H were conducted on three laboratory exhaust stacks. These tests were conducted in accordance with a program to verify low emissions from stacks without continuous in-stack monitoring.</p> <p>Due to the permanent shutdown of metals production, resumption of the FFCA Stack Testing Program is unlikely. A proposal is being developed to substitute the NESHAP Subpart H testing/monitoring program for the FFCA Stack Testing. When this proposal is completed it will be formally submitted to U.S. EPA.</p>
D.2	Provide U.S. EPA with stack-test results for stacks tested that year.	45 days	No stacks related to production were operated or tested in 1993.
E.1	Maintain records of monthly particulate matter emissions.	-----	Ongoing.

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TABLE 1

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

MAY 31, 1994

RCRA

A.1	Conduct a hazardous waste determination on all waste streams.	30 days	Complete. Pursuant to the Proposed Amended Consent Decree, a RCRA waste evaluation was conducted on all identified waste streams pertaining to the PACD.
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.
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 March 26, 1993 (DOE-1471-93). Facility closure will be completed on a date the last TSD unit is closed.

REPORTING REQUIREMENTS

B.	Issue monthly progress report of actions taken to ensure compliance with FFCA requirements.	monthly	April's FFCA Monthly Progress Report was transmitted to the U.S. EPA on May 20, 1994.
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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 MAY 31, 1994

ENCLOSURE C

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

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

Period Ending May 31, 1994

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 May 1, through May 31, 1994, to implement Part V, Radon-222 Control and Abatement Plan, paragraphs 19-33 of the FFA-CARE.

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 May 31, 1994

<u>FFA Part, Paragraph(s)</u>	<u>Description of Commitment</u>	<u>FFA Due Date</u>	<u>Status of Commitment</u>
Part V, 19 & 21	Implement the K-65 Silos 1 and 2 Removal Action in accordance with the approved Silos 1 and 2 Removal Action Work Plan.	12/1/91	Completed. Installation of the bentonite completed by 1/28/91.
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. Concentrations off-site remain well below performance goal of removal action.
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 has prepared a revision to the methodology. Comment responses to the U.S. EPA's disapproval of the revised methodology will be incorporated into the Final Report. The draft Final Report for the Silos 1 and 2 Removal Action was submitted 3/25/94 for internal DOE-FN review and comment. Comments were received on 4/21/94 and a comment resolution meeting was conducted on 4/28/94. The final report was submitted to U.S. EPA on May 17, 1994. Commitment is completed.

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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 May 31, 1994

<u>FFA Part, Paragraph(s)</u>	<u>Description of Commitment</u>	<u>FFA Due Date</u>	<u>Status of Commitment</u>
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 submitted a revision to the methodology to the U.S. EPA on 12/17/92. Applicable information contained in this revised methodology will be included in the final report, which is now being prepared. The final report was issued to the U.S. EPA on May 17, 1994. The performance of the removal action was a success; no further action is required. Action completed.
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 May 1994.

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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 May 31, 1994

<u>FFA Part, Paragraph(s)</u>	<u>Description of Commitment</u>	<u>FFA Due Date</u>	<u>Status of Commitment</u>
Part V, 26	Directly measure radon-222 flux from Waste Pits 1, 2, 3, 4, and 5 and the Clearwell in the RI/FS under the CERCLA Consent Agreement.	None specified.	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. A letter was received from the U.S. EPA on 10/16/92 giving approval of the proposed method for measuring the radon flux from Pit 4. The letter also stated that since the Clearwell is water covered, and Pit 5 is nearly 100% water covered, the flux from Pit 5 and the Clearwell may be assumed to be zero.
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.	Completed. An estimate of radon flux from the K-65 Silo 3 was submitted to the U.S. EPA on 12/17/91. Radon flux for the silo was estimated to be above 20 pCi/m ² -s.
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.

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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 May 31, 1984

<u>FFA Part, Paragraph(s)</u>	<u>Description of Commitment</u>	<u>FFA Due Date</u>	<u>Status of Commitment</u>
Part V, 30	Submit methodology for direct measurement or other appropriate means of characterization of the relevant emissions pursuant to paragraph 29 of the FFA.	Within 45 days of the U.S. EPA response pursuant to paragraph 29.	None required.
Part V, 31	Submit results of measurements pursuant to paragraph 30.	Within 30 days of U.S. EPA approval of characterization method.	None required.
Part VI, 31	Submit monthly report on steps undertaken to implement Part V of the FFA-CARE and the data obtained in the preceding month.	20th day of succeeding month.	The progress report being submitted herewith as an integral part of the CERCLA Consent Agreement Monthly Progress Report.

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

Period Ending May 31, 1994

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 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 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).

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The radon data submitted in Enclosure C: Due to its high source strength, unique measurement methods had to be devised to measure radon emissions from this nonstandard source. The data that has been gathered since 1992 is collected by qualified technicians using detailed procedures. This data although not yet verified, serves as a very good qualitative indicator of the integrity of the bentonite sealant layer covering the residues in the silos. Activities have been initiated to enhance the quality and independently verify the data that is being collected.

NOTE:

Attached are revised Silo 2 radon headspace concentration data for the months of February, March, and April 1994. These revisions are necessary to reflect the corrected efficiency for the Lucas cell currently used to monitor Silo 2 radon concentrations.

The result of this change is that Silo 2 radon headspace concentrations have been over-estimated by approximately 1 million pCi/L. The over-estimated data have been used for previous CA/FFCA/FFA-CARE Monthly Reports, but the corrected efficiency has been used for data reported in the May report.

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

MONTH: **MAY**
YEAR: **94**

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

SELECTED RADON DATA REPORT
(Monthly Summary of Selected Sampling Locations)

Daily Averages:	AMS-8 (pCi/L)	AMS-8 (pCi/L)	PILOT PLANT (pCi/L)	SKGD (pCi/L)
05/01/94	0.3	0.3	(b)	1.3
05/02/94	0.4	0.5	0.3 (b)	1.4
05/03/94	0.4	0.5	0.5	1.5
05/04/94	0.4	0.5	0.5	1.4
05/05/94	0.6	0.6	0.7	1.4
05/06/94	0.4	0.5	0.5	1.3
05/07/94	0.4	0.5	0.5	1.4
05/08/94	0.3	0.3	0.5	1.3
05/09/94	0.5	0.6	0.3 (b)	1.4
05/10/94	0.6	0.6	0.3 (b)	1.5
05/11/94	0.6	0.6	0.7	1.5
05/12/94	0.4	0.4	0.6	1.3
05/13/94	0.6	0.7	0.5	1.6
05/14/94	0.8	0.7	0.6	1.5
05/15/94	0.3	0.4	0.9	1.3
05/16/94	0.7	0.4	0.5	1.4
05/17/94	0.9	0.4	0.5	1.4
05/18/94	0.9	0.6	0.2 (b)	1.6
05/19/94	0.8	0.5	(b)	1.5
05/20/94	1.0	0.7	(b)	1.5
05/21/94	1.0	0.8	(b)	1.7
05/22/94	1.1	1.0	(b)	1.6
05/23/94	1.2	0.9	(b)	1.5
05/24/94	1.3	0.9	(b)	1.5
05/25/94	0.4	0.5	(b)	1.4
05/26/94	0.4	0.4	(b)	1.4
05/27/94	0.4	0.4	(b)	1.4
05/28/94	0.9	0.9	(b)	1.7
05/29/94	1.1	0.9	(b)	1.7
05/30/94	1.1	0.9	(b)	1.7
05/31/94	1.2	0.6	(b)	1.6

Monthly Averages:	AMS-8 (pCi/L)	AMS-8 (pCi/L)	PILOT PLANT (pCi/L)	SKGD (pCi/L)
AVERAGE:	0.7	0.6	0.5	1.5
MAXIMUM:	1.3	1.0	0.9	1.7
MINIMUM:	0.3	0.3	0.2	1.3
MEDIAN:	0.6	0.6	0.3	1.5
STD DEV:	0.3	0.2	0.2	0.1

STANDARD LEGEND:

1. "(a)" indicates censored data due to erroneous readings.
2. "(b)" indicates data loss due to monitor malfunction.
3. "(c)" indicates operator error in programming monitor.
4. "(d)" indicates data loss due to relocation of monitor.

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

MONTH: **MAY**
YEAR: **94**

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

SELECTED RADON DATA REPORT
(Monthly Summary of Selected Sampling Locations)

Daily Averages:	K-65, NW (pCi/L)	K-65, SW (pCi/L)	K-65, NE (pCi/L)	K-65, SE (pCi/L)
05/01/94	0.5	0.4	1.4	0.5
05/02/94	0.7	1.1	2.1	0.2 (b)
05/03/94	0.8	2.0	1.1	(b)
05/04/94	0.8	1.0	0.5	(b)
05/05/94	1.2	0.9	2.4	0.3 (b)
05/06/94	0.8	1.2	1.0	0.8
05/07/94	1.0	2.0	1.1	0.8
05/08/94	1.0	0.8	1.5	0.7
05/09/94	1.2	1.3	3.8	2.4
05/10/94	0.9	1.0	2.9	2.3
05/11/94	0.9	1.1	3.0	2.2
05/12/94	0.8	0.7	1.5	1.0
05/13/94	1.3	1.4	2.0	1.9
05/14/94	1.9	2.1	3.3	2.8
05/15/94	0.5	0.5	1.2	0.5
05/16/94	0.8	0.8	1.1	1.2
05/17/94	0.8	0.6	0.8	0.8
05/18/94	1.0	1.3	1.5	1.5
05/19/94	0.9	1.0	1.0	0.9
05/20/94	1.3	1.7	2.5	2.8
05/21/94	1.8	1.7	3.4	2.7
05/22/94	1.6	1.5	4.5	2.5
05/23/94	1.6	1.4	4.4	1.8
05/24/94	1.5	1.6	4.5	2.6
05/25/94	1.3	1.0	2.3	1.4
05/26/94	0.7	0.7	1.1	0.7
05/27/94	0.7	0.7	1.1	0.8
05/28/94	1.4	1.2	3.3	2.3
05/29/94	1.4	1.3	5.6	2.7
05/30/94	1.7	1.4	4.5	2.1
05/31/94	1.5	1.2	3.7	1.4

Monthly Averages:	K-65, NW (pCi/L)	K-65, SW (pCi/L)	K-65, NE (pCi/L)	K-65, SE (pCi/L)
AVERAGE:	1.1	1.2	2.4	1.5
MAXIMUM:	1.9	2.1	5.6	2.8
MINIMUM:	0.5	0.4	0.5	0.2
MEDIAN:	1.0	1.2	2.3	1.4
STD. DEV.:	0.4	0.4	1.4	0.8

STANDARD LEGEND:

1. "(a)" indicates censored data due to erroneous readings.
2. "(h)" indicates data loss due to monitor malfunction.
3. "(c)" indicates operator error in programming monitor.
4. "(d)" indicates data loss due to relocation of monitor.

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

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

K-65 SILO REPORT

LOCATION: Silo # 1

DATE: May 1994

Day	Ambient Temp ° F	Press In. Hg.	Temperature Head Space ° F	Inter. Hum. %	Diff. Press In. HG	Head Space Radon (pCi/l)
** 1	40.7	29.54	48.8	*	0.019	62,822
** 2	44.0	29.67	47.9	*	-0.005	257,859
3	47.8	29.59	48.2	*	-0.003	160,639
4	51.8	29.50	48.0	*	-0.002	361,228
5	56.8	29.48	48.4	*	-0.001	526,879
6	50.0	29.47	48.9	*	-0.003	465,707
** 7	50.6	29.25	48.6	*	-0.027	518,886
8	53.3	29.40	48.6	*	0.024	405,534
9	55.5	29.38	49.1	*	-0.001	401,881
10	54.9	29.52	49.3	*	-0.001	300,481
11	58.1	29.45	49.5	*	-0.000	468,718
** 12	56.5	29.42	50.2	*	0.008	253,118
13	55.8	29.50	50.2	*	-0.000	499,299
14	57.0	29.37	50.4	*	0.010	741,078
** 15	65.2	29.26	50.9	*	-0.004	499,077
16	57.6	29.43	51.2	*	-0.002	125,469
17	54.9	29.56	51.2	*	-0.001	94,289
18	53.9	29.56	51.3	*	-0.002	137,530
19	55.4	29.55	51.3	*	-0.001	172,530
20	57.7	29.52	51.6	*	0.000	231,639
21	60.6	29.54	52.0	*	0.001	368,068
22	66.9	29.53	52.7	*	0.002	651,533
23	73.0	29.44	53.7	*	0.004	752,852
24	71.7	29.32	54.6	*	0.003	529,469
** 25	68.1	29.17	55.1	*	-0.012	767,415
26	63.1	29.15	55.3	*	-0.000	335,189
27	53.8	29.48	54.9	*	-0.000	200,464
28	56.7	29.55	54.5	*	0.000	445,225
29	63.5	29.52	54.7	*	0.002	520,378
30	69.2	29.52	55.3	*	0.003	535,305
31	73.4	29.49	56.0	*	0.004	536,764
ARITHMETIC MEAN	58.0	29.46	51.4	0.0	0.000	397,591
MAXIMUM	73.4	29.67	56.0	0.0	0.024	767,415
MINIMUM	40.7	29.15	47.9	0.0	-0.027	62,822
MEDIAN	56.7	29.49	51.2	0.0	-0.000	405,534

Note: * - Silo #1 Relative Humidity was inoperable, default value = 0.
 ** - Some Delta Pressure values were outside of range restrictions.

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

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

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K-65 SILO REPORT

LOCATION: Silo # 2

DATE: May 1994

Day	Ambient Temp °F	Press In. Hg.	Temperature Head Space °F	Inter. Hum. %	Diff. Press In. HG	Head Space Radon (pCi/l)
** 1	40.7	29.54	48.7	88.1	0.104	2,037,813
2	44.0	29.67	47.9	88.4	0.023	2,079,475
3	47.8	29.59	48.1	88.0	-0.008	1,933,568
4	51.6	29.50	47.9	88.0	-0.008	2,154,177
5	56.8	29.48	48.3	88.0	-0.008	2,137,724
6	50.0	29.47	48.7	88.0	-0.008	2,090,857
7	50.6	29.25	48.5	88.0	-0.041	2,133,195
8	53.3	29.40	48.5	87.6	0.016	2,125,601
9	55.5	29.38	48.9	87.5	-0.009	2,017,926
10	54.9	29.52	49.1	87.4	-0.008	2,141,759
11	58.1	29.45	49.2	87.4	-0.009	2,012,122
** 12	56.5	29.42	49.9	87.1	0.005	2,147,649
13	55.8	29.50	49.9	87.1	-0.008	2,219,863
14	57.0	29.37	50.1	87.1	0.006	2,268,145
** 15	65.2	29.26	50.6	87.0	-0.001	2,222,026
16	57.6	29.43	50.9	87.0	-0.008	2,230,030
17	54.9	29.56	50.9	87.0	-0.009	2,135,840
18	53.9	29.56	51.0	87.0	-0.009	2,073,910
19	55.4	29.55	51.0	87.0	-0.009	2,191,136
20	57.7	29.52	51.3	87.0	-0.009	2,232,668
21	60.6	29.54	51.6	86.9	-0.009	2,352,322
22	66.9	29.53	52.2	86.5	-0.010	2,404,259
23	73.0	29.44	53.2	86.3	-0.011	2,460,664
24	71.7	29.32	54.0	86.2	-0.011	2,313,691
25	68.1	29.17	54.5	86.0	-0.025	2,514,389
26	63.1	29.15	54.6	86.0	-0.011	2,447,435
27	53.8	29.48	54.3	86.1	-0.011	2,421,787
28	56.7	29.55	53.8	86.3	-0.010	2,639,691
29	63.5	29.52	54.1	86.2	-0.011	2,645,305
30	69.2	29.52	54.6	86.0	-0.011	2,639,290
31	73.4	29.49	55.2	85.9	-0.011	2,570,815
ARITHMETIC MEAN	56.0	29.46	51.0	87.0	-0.004	2,257,907
MAXIMUM	73.4	29.67	55.2	88.4	0.104	2,645,305
MINIMUM	40.7	29.15	47.9	85.9	-0.041	1,933,568
MEDIAN	56.7	29.49	50.9	87.0	-0.009	2,219,863

Note: ** - Some Delta Pressure values were outside of range restrictions

CONSOLIDATED 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
RADON CONCENTRATIONS

MONTH: MAY 1994

REPORT GENERATED: 06/07/94

Daily Summary of Recorded Headspace Concentrations
(recorded at 5 minute intervals)

Date	SILO 1				SILO 2			
	Average	Maximum	Minimum	Std. Dev.	Average	Maximum	Minimum	Std. Dev.
05/01/94	63,000	596,000	8,000	80,000	2,038,000	2,236,000	1,774,000	103,000
05/02/94	258,000	786,000	50,000	173,000	2,079,000	2,269,000	1,593,000	107,000
05/03/94	161,000	980,000	6,000	208,000	1,934,000	2,253,000	1,131,000	244,000
05/04/94	361,000	1,086,000	16,000	340,000	2,154,000	2,266,000	1,906,000	85,000
05/05/94	527,000	1,088,000	85,000	301,000	2,138,000	2,302,000	1,576,000	111,000
05/06/94	466,000	953,000	72,000	247,000	2,091,000	2,269,000	1,411,000	151,000
05/07/94	519,000	1,174,000	8,000	390,000	2,133,000	2,302,000	1,741,000	119,000
05/08/94	406,000	1,141,000	11,000	356,000	2,126,000	2,269,000	1,807,000	72,000
05/09/94	402,000	1,023,000	54,000	249,000	2,018,000	2,269,000	1,395,000	206,000
05/10/94	300,000	934,000	21,000	232,000	2,142,000	2,269,000	1,923,000	53,000
05/11/94	469,000	957,000	89,000	218,000	2,012,000	2,302,000	1,246,000	223,000
05/12/94	253,000	1,042,000	11,000	232,000	2,148,000	2,266,000	1,774,000	84,000
05/13/94	499,000	1,048,000	22,000	294,000	2,220,000	2,319,000	1,972,000	70,000
05/14/94	741,000	1,174,000	175,000	298,000	2,268,000	2,368,000	1,956,000	68,000
05/15/94	499,000	1,174,000	43,000	345,000	2,222,000	2,368,000	1,989,000	81,000
05/16/94	125,000	851,000	11,000	163,000	2,230,000	2,352,000	2,055,000	62,000
05/17/94	84,000	505,000	9,000	85,000	2,136,000	2,385,000	1,875,000	152,000
05/18/94	138,000	688,000	14,000	144,000	2,074,000	2,385,000	1,312,000	234,000
05/19/94	173,000	671,000	17,000	139,000	2,191,000	2,418,000	1,807,000	148,000
05/20/94	232,000	796,000	22,000	176,000	2,233,000	2,484,000	1,741,000	149,000
05/21/94	386,000	904,000	30,000	218,000	2,352,000	2,484,000	1,972,000	81,000
05/22/94	652,000	1,037,000	55,000	323,000	2,404,000	2,533,000	2,286,000	61,000
05/23/94	753,000	1,045,000	143,000	233,000	2,461,000	2,599,000	2,253,000	80,000
05/24/94	529,000	1,019,000	36,000	271,000	2,314,000	2,665,000	1,527,000	307,000
05/25/94	767,000	1,173,000	209,000	258,000	2,514,000	2,715,000	1,708,000	126,000
05/26/94	335,000	1,174,000	11,000	378,000	2,447,000	2,731,000	1,758,000	157,000
05/27/94	200,000	891,000	7,000	220,000	2,422,000	2,698,000	1,543,000	225,000
05/28/94	445,000	987,000	29,000	328,000	2,840,000	2,764,000	2,401,000	54,000
05/29/94	520,000	986,000	53,000	281,000	2,645,000	2,847,000	2,269,000	114,000
05/30/94	535,000	978,000	89,000	261,000	2,639,000	2,830,000	2,269,000	126,000
05/31/94	537,000	1,010,000	137,000	222,000	2,571,000	2,847,000	1,939,000	227,000

Grab Samples of Headspace

Date	SILO 1	SILO 2
	Concentration	Concentration
05/02/94	24,000	2,836,000
05/05/94	1,703,000	3,175,000
05/10/94	485,000	2,872,000
05/12/94	28,000	2,879,000
05/16/94	84,000	3,007,000
05/19/94	1,550,000	3,356,000
05/24/94	1,651,000	3,413,000
05/27/94	307,000	3,747,000

- Notes:
1. All values reported to the nearest thousand pCi/L to remain consistent with the precision of the calibration source.
 2. "Daily Summary of Recorded Headspace Concentrations" for Silo 2 reflects the use of a new sensitivity value in radon monitoring equipment.

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**CONSOLIDATED 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

566 8

**K-65 SILO REPORT
RADON CONCENTRATIONS**

MONTH: FEBRUARY 1994 (Revised)

REPORT GENERATED: 06/08/94

**Daily Summary of Recorded Headspace Concentrations
(recorded at 5 minute intervals)**

Date	SILO 1				SILO 2			
	Average	Maximum	Minimum	Std. Dev.	Average	Maximum	Minimum	Std. Dev.
02/01/94	155,000	433,000	48,000	67,000	2,439,000	3,149,000	1,616,000	395,000
02/02/94	268,000	819,000	48,000	192,000	2,679,000	3,268,000	1,568,000	512,000
02/03/94	109,000	634,000	12,000	125,000	2,230,000	3,316,000	1,353,000	548,000
02/04/94	359,000	911,000	21,000	266,000	3,107,000	3,484,000	1,568,000	392,000
02/05/94	376,000	918,000	56,000	263,000	3,080,000	3,484,000	1,856,000	355,000
02/06/94	263,000	591,000	142,000	128,000	3,227,000	3,388,000	3,077,000	72,000
* 02/07/94	167,000	735,000	39,000	148,000	2,808,000	3,340,000	2,167,000	296,000
02/08/94	450,000	1,114,000	77,000	263,000	2,787,000	3,412,000	2,047,000	304,000
02/09/94	248,000	886,000	104,000	143,000	2,681,000	3,125,000	2,191,000	179,000
02/10/94	164,000	618,000	50,000	99,000	2,339,000	2,861,000	1,927,000	197,000
02/11/94	183,000	930,000	21,000	183,000	2,458,000	3,125,000	1,927,000	241,000
02/12/94	420,000	1,224,000	71,000	372,000	2,872,000	3,484,000	2,311,000	347,000
02/13/94	85,000	482,000	21,000	80,000	2,680,000	3,149,000	1,999,000	231,000
02/14/94	280,000	787,000	50,000	177,000	2,796,000	3,292,000	1,856,000	294,000
02/15/94	116,000	592,000	11,000	96,000	2,970,000	3,292,000	2,335,000	294,000
02/16/94	381,000	889,000	67,000	269,000	3,031,000	3,197,000	2,837,000	104,000
**02/17/94	430,000	905,000	74,000	290,000	2,880,000	3,005,000	2,764,000	54,000
02/18/94	521,000	919,000	66,000	305,000	2,689,000	2,814,000	2,286,000	101,000
02/19/94	550,000	936,000	129,000	260,000	2,444,000	2,748,000	1,444,000	327,000
02/20/94	491,000	905,000	64,000	227,000	2,440,000	2,698,000	1,428,000	179,000
02/21/94	138,000	897,000	14,000	194,000	2,471,000	2,665,000	1,824,000	195,000
02/22/94	78,000	790,000	8,000	120,000	1,680,000	2,517,000	652,000	545,000
02/23/94	328,000	1,175,000	10,000	326,000	1,872,000	2,665,000	553,000	694,000
02/24/94	57,000	720,000	7,000	74,000	1,619,000	2,368,000	916,000	354,000
02/25/94	457,000	1,176,000	19,000	378,000	2,101,000	2,616,000	883,000	493,000
02/26/94	99,000	436,000	25,000	51,000	2,151,000	2,500,000	1,758,000	202,000
02/27/94	258,000	906,000	31,000	190,000	2,419,000	2,649,000	2,104,000	124,000
02/28/94	161,000	807,000	33,000	155,000	2,488,000	2,847,000	2,022,000	163,000

Notes:

1. All values reported to the nearest thousand pCi/L to remain consistent with the precision of the calibration source.
2. Data reflects the use of the new sensitivity value for the radon monitoring equipment installed on February 17, 1994.
 - * Data lost due to data logging system malfunction (02/06/94 03:48 - 02/07/94 09:41).
 - ** Data edited due to changeout of radon monitoring equipment (02/17/94 10:51 - 14:51)

5668

CONSOLIDATED 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

REVISED K-65 SILO REPORT

LOCATION: Silo # 2

DATE: February 1994

Day	Ambient Temp °F	Press In. Hg.	Temperature Head Space °F	Inter. Hum. %	Diff. Press In. HG	Head Space Radon (pCi/l)
1	8.4	29.74	36.5	93.8	-0.004	2,438,697
2	19.8	29.54	35.8	93.4	-0.004	2,678,634
3	20.4	29.63	35.9	93.1	-0.005	2,229,936
4	28.8	29.54	35.9	93.1	-0.004	3,106,630
5	28.8	29.40	36.3	93.0	-0.004	3,060,025
6	14.8	29.48	36.4	93.1	-0.004	3,226,693
7	26.9	29.63	36.2	93.0	-0.005	2,806,269
8	23.7	29.29	36.1	93.0	-0.005	2,786,680
** 9	12.9	29.50	36.0	93.0	0.105	2,680,795
** 10	13.5	29.76	35.4	93.0		2,339,014
** 11	21.1	29.58	35.2	93.0		2,456,155
** 12	26.5	29.50	35.3	93.0	0.025	2,672,429
** 13	27.6	29.65	35.5	93.0	0.034	2,680,047
14	32.6	29.68	35.3	93.0	-0.005	2,795,692
15	39.9	29.61	36.1	93.0	-0.004	2,970,116
16	30.1	29.83	36.3	93.0	-0.002	3,030,558
17	35.0	29.74	36.4	92.9	-0.002	2,880,268
18	43.5	29.67	36.7	92.7	-0.004	2,686,794
19	58.1	29.58	37.7	92.4	-0.007	2,443,612
20	55.3	29.51	39.0	92.0	-0.007	2,440,276
21	40.7	29.63	39.7	92.0	-0.007	2,470,944
22	30.5	29.56	39.2	92.7	-0.015	1,660,016
23	40.2	29.09	38.8	92.4	-0.084	1,871,789
24	23.3	29.33	38.6	92.9	-0.007	1,619,087
25	25.9	29.38	38.1	92.9	-0.006	2,101,488
26	16.5	29.76	37.5	93.0	-0.005	2,151,345
27	19.7	29.68	36.9	92.8	-0.005	2,419,468
28	28.6	29.74	36.7	92.6	-0.006	2,488,469

ARITHMETIC MEAN	28.3	29.58	36.8	92.9	-0.001	2,551,292
MAXIMUM	58.1	29.68	39.7	93.6	0.105	3,226,693
MINIMUM	8.4	29.09	35.2	92.0	-0.084	1,619,087
MEDIAN	27.3	29.60	36.4	93.0	-0.005	2,563,551

Note: ** - Some or all Delta Pressure values were outside of range restrictions
Limited data available on the 6th and 7th because the DLS system was down.
Data sensed on the 17th due to instrument change out.

000074

CONSOLIDATED 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
RADON CONCENTRATIONS

MONTH: MARCH 1994 (Revised)

REPORT GENERATED: 06/08/94

Daily Summary of Recorded Headspace Concentrations
(recorded at 5 minute intervals)

Date	SILO 1				SILO 2			
	Average	Maximum	Minimum	Std. Dev.	Average	Maximum	Minimum	Std. Dev.
03/01/94	54,000	353,000	10,000	36,000	2,112,000	2,632,000	1,246,000	308,000
03/02/94	37,000	598,000	6,000	61,000	2,049,000	2,649,000	1,180,000	333,000
03/03/94	264,000	1,082,000	9,000	295,000	2,660,000	2,979,000	1,840,000	228,000
03/04/94	292,000	1,175,000	6,000	367,000	2,570,000	2,996,000	1,527,000	309,000
03/05/94	408,000	1,041,000	45,000	302,000	2,741,000	2,896,000	2,401,000	94,000
03/06/94	434,000	975,000	82,000	225,000	2,594,000	2,880,000	1,741,000	231,000
03/07/94	346,000	999,000	48,000	248,000	2,598,000	2,847,000	1,906,000	143,000
03/08/94	201,000	820,000	13,000	208,000	2,432,000	2,698,000	1,906,000	155,000
03/09/94	181,000	748,000	31,000	146,000	2,094,000	2,583,000	124,000	328,000
03/10/94	96,000	642,000	27,000	95,000	2,392,000	2,616,000	1,923,000	103,000
03/11/94	208,000	817,000	22,000	175,000	2,516,000	2,682,000	2,220,000	114,000
03/12/94	387,000	969,000	87,000	260,000	2,575,000	2,830,000	2,170,000	137,000
03/13/94	657,000	1,062,000	147,000	275,000	2,732,000	2,880,000	2,104,000	120,000
03/14/94	637,000	1,146,000	145,000	284,000	2,658,000	2,896,000	2,137,000	157,000
03/15/94	233,000	1,175,000	9,000	353,000	2,175,000	2,847,000	1,229,000	404,000
03/16/94	29,000	154,000	6,000	22,000	2,304,000	2,665,000	1,576,000	184,000
03/17/94	673,000	1,176,000	51,000	401,000	2,584,000	2,781,000	2,236,000	133,000
03/18/94	421,000	1,176,000	7,000	509,000	1,909,000	2,814,000	454,000	759,000
03/19/94	527,000	1,175,000	76,000	322,000	2,472,000	2,665,000	2,071,000	121,000
03/20/94	787,000	1,175,000	111,000	365,000	2,516,000	2,665,000	1,939,000	145,000
03/21/94	469,000	1,175,000	7,000	479,000	2,144,000	2,665,000	1,065,000	439,000
03/22/94	372,000	1,086,000	104,000	225,000	2,232,000	2,550,000	1,411,000	278,000
03/23/94	632,000	1,175,000	83,000	315,000	2,254,000	2,583,000	1,345,000	286,000
03/24/94	145,000	751,000	16,000	132,000	1,912,000	2,451,000	817,000	353,000
03/25/94	124,000	752,000	5,000	166,000	2,216,000	2,418,000	1,741,000	133,000
03/26/94	649,000	1,174,000	101,000	344,000	2,301,000	2,533,000	1,461,000	198,000
03/27/94	598,000	1,176,000	53,000	366,000	2,156,000	2,533,000	1,180,000	262,000
03/28/94	638,000	1,175,000	123,000	270,000	2,092,000	2,368,000	1,279,000	204,000
03/29/94	90,000	610,000	10,000	67,000	1,970,000	2,236,000	1,213,000	176,000
* 03/30/94	311,000	870,000	93,000	183,000	2,156,000	2,302,000	1,906,000	88,000
* 03/31/94	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

- Notes:
1. All values reported to the nearest thousand pCi/L to remain consistent with the precision of the calibration source.
 2. Data reflects the use of the new sensitivity value for the radon monitoring equipment installed on February 17, 1994.
- * Data lost due to data logging system malfunction (03/30/94 12:48 - 04/04/94 09:01).

5668

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CONSOLIDATED 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

REVISED K-85 SILO REPORT

LOCATION: Silo # 2

DATE: March 1994

Day	Ambient Temp ° F	Press In. Hg.	Temperature Head Space ° F	Inter. Hum. %	Diff. Press In. HG	Head Space Radon (pCi/l)
1	30.3	29.61	36.9	92.5	-0.007	2,112,320
2	29.1	29.29	36.9	92.5	-0.007	2,049,022
3	35.4	29.28	37.0	92.3	-0.005	2,659,886
4	43.5	29.13	37.7	92.0	-0.006	2,569,859
5	40.1	29.41	38.2	92.0	-0.006	2,740,703
6	48.2	29.43	38.7	92.0	-0.007	2,594,239
7	42.8	29.46	39.4	92.0	-0.007	2,598,230
8	34.1	29.63	39.4	92.0	-0.006	2,431,994
9	25.6	29.42	38.9	92.0	-0.007	2,094,418
10	28.0	29.49	38.4	92.0	-0.006	2,392,126
11	29.4	29.82	38.1	92.1	-0.006	2,515,706
12	35.2	29.83	37.9	92.0	-0.006	2,574,627
13	39.8	29.51	38.2	92.0	-0.006	2,732,335
14	41.8	29.31	38.6	92.0	-0.007	2,655,539
15	45.6	29.14	39.3	92.0	-0.006	2,174,702
16	29.5	29.40	39.5	92.0	-0.006	2,304,260
17	28.7	29.38	38.9	92.0	-0.005	2,584,334
18	40.5	28.98	39.2	91.9	-0.027	1,908,983
19	34.0	29.35	39.2	91.8	-0.006	2,472,205
20	48.9	29.30	39.5	91.4	-0.006	2,516,298
21	49.9	29.11	40.5	91.0	-0.007	2,144,481
22	45.0	29.39	40.5	91.3	-0.007	2,231,903
23	58.1	29.26	41.0	91.0	-0.008	2,253,666
24	60.0	29.29	42.6	91.0	-0.008	1,911,845
25	35.8	29.50	42.4	91.0	-0.007	2,215,569
26	37.5	29.40	41.7	91.0	-0.007	2,301,006
27	41.2	29.10	41.5	91.0	-0.031	2,156,021
** 28	41.9	29.31	41.6	91.0	-0.009	2,091,586
29	35.4	29.58	41.6	91.0	-0.007	1,969,727
30	30.1	29.78	41.1	91.0	-0.006	2,156,365
31						
ARITHMETIC MEAN	38.8	29.40	39.5	91.7	-0.008	2,337,132
MAXIMUM	60.0	29.83	42.6	92.5	-0.005	2,740,703
MINIMUM	25.6	28.98	36.9	91.0	-0.031	1,908,983
MEDIAN	38.7	29.40	39.3	92.0	-0.007	2,302,633

Note: ** - Some Delta Pressure values were outside of range restrictions
Only partial data for 3/30 and no data for 3/31 due to malfunction of DLS.

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**CONSOLIDATED 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

5668

**K-65 SILO REPORT
RADON CONCENTRATIONS**

MONTH: APRIL 1994 (Revised)

REPORT GENERATED: 06/08/94

Daily Summary of Recorded Headspace Concentrations
(recorded at 5 minute intervals)

Date	SILO 1				SILO 2			
	Average	Maximum	Minimum	Std. Dev.	Average	Maximum	Minimum	Std. Dev.
* 04/01/94	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
* 04/02/94	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
* 04/03/94	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
04/04/94	907,000	1,174,000	113,000	226,000	2,323,000	2,451,000	2,038,000	73,000
04/05/94	654,000	1,175,000	163,000	274,000	2,233,000	2,434,000	1,642,000	146,000
04/06/94	323,000	1,174,000	17,000	337,000	1,905,000	2,401,000	1,098,000	301,000
04/07/94	102,000	546,000	15,000	71,000	2,048,000	2,269,000	1,692,000	113,000
04/08/94	682,000	1,150,000	106,000	345,000	2,217,000	2,319,000	1,939,000	68,000
04/09/94	480,000	1,139,000	18,000	365,000	1,890,000	2,335,000	619,000	382,000
04/10/94	309,000	1,091,000	7,000	314,000	1,882,000	2,253,000	1,180,000	199,000
04/11/94	113,000	801,000	7,000	142,000	1,615,000	2,269,000	669,000	355,000
04/12/94	648,000	1,174,000	164,000	311,000	1,977,000	2,286,000	1,048,000	278,000
04/13/94	350,000	1,175,000	11,000	356,000	1,605,000	2,269,000	520,000	547,000
04/14/94	432,000	1,155,000	37,000	323,000	1,860,000	2,302,000	899,000	419,000
04/15/94	672,000	1,174,000	22,000	425,000	1,869,000	2,253,000	1,593,000	402,000
04/16/94	139,000	868,000	12,000	183,000	1,320,000	2,121,000	338,000	549,000
04/17/94	166,000	845,000	9,000	185,000	1,874,000	2,170,000	1,081,000	241,000
04/18/94	382,000	913,000	47,000	225,000	1,769,000	2,154,000	669,000	390,000
04/19/94	279,000	869,000	39,000	201,000	1,977,000	2,154,000	1,229,000	160,000
04/20/94	320,000	867,000	29,000	214,000	2,080,000	2,170,000	1,890,000	66,000
04/21/94	447,000	986,000	26,000	277,000	2,004,000	2,187,000	1,444,000	151,000
**04/22/94	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
**04/23/94	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
**04/24/94	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
**04/25/94	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
04/26/94	564,000	999,000	80,000	321,000	1,926,000	2,220,000	1,362,000	265,000
04/27/94	383,000	910,000	83,000	224,000	1,925,000	2,154,000	1,081,000	178,000
04/28/94	302,000	989,000	12,000	268,000	1,946,000	2,253,000	1,180,000	189,000
04/29/94	559,000	1,028,000	169,000	248,000	2,093,000	2,269,000	1,312,000	152,000
04/30/94	581,000	1,174,000	25,000	400,000	2,161,000	2,319,000	1,625,000	132,000

- Notes:**
1. All values reported to the nearest thousand pCi/L to remain consistent with the precision of the calibration source.
 2. Data reflects the use of the new sensitivity value for the radon monitoring equipment installed on February 17, 1994.
 - * Data lost due to data logging system malfunction (03/30/94 12:46 - 04/04/94 09:01).
 - ** Data loss due to site wide power outage (04/22/94 - 04/26/94).

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CONSOLIDATED 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

REVISED K-65 SILO REPORT

LOCATION: Silo # 2

DATE: April 1994

Day	Ambient Temp °F	Press In. Hg.	Temperature Head Space °F	Inter. Hum. %	Diff. Press In. HG	Head Space Radon (pCi/l)
*** 1						
*** 2						
*** 3						
4	50.8	29.40	42.0	90.1	-0.008	2,322,885
5	50.7	29.22	42.5	90.2	-0.007	2,233,002
** 6	35.7	29.23	42.6	90.0	-0.002	1,904,980
7	35.1	29.68	42.0	90.4	0.005	2,047,594
8	45.3	29.71	42.0	90.4	-0.008	2,217,052
9	54.7	29.48	42.7	90.0	-0.008	1,890,178
10	49.9	29.45	43.4	90.0	-0.033	1,881,755
11	41.1	29.68	43.3	90.0	-0.049	1,615,180
12	59.9	29.37	43.2	90.0	-0.092	1,977,497
13	51.7	29.18	44.3	90.0	-0.008	1,605,323
14	59.3	29.28	44.2	89.8	-0.008	1,860,183
15	61.5	29.21	45.4	89.5	-0.012	1,868,569
16	52.0	29.38	45.5	89.8	-0.009	1,319,558
17	50.8	29.52	45.4	89.5	-0.007	1,874,449
18	60.4	29.50	45.7	89.4	-0.009	1,768,597
19	65.3	29.42	46.8	89.0	-0.008	1,977,141
20	54.0	29.60	47.0	89.0	-0.008	2,079,543
21	52.4	29.60	47.2	89.0	-0.008	2,004,493
*** 22						
*** 23						
*** 24						
*** 25						
*** 26	77.0	29.31	49.4	88.0	-0.010	1,925,571
*** 27	70.2	29.44	49.9	88.0	0.004	1,925,041
28	60.2	29.57	50.2	88.0	0.004	1,946,113
29	55.7	29.60	50.0	88.0	0.061	2,092,518
** 30	51.1	29.43	49.3	88.0	0.023	2,161,362
ARITHMETIC MEAN	54.1	29.44	45.4	89.4	-0.008	1,934,721
MAXIMUM	77.0	29.71	50.2	90.4	0.061	2,322,885
MINIMUM	35.1	29.18	42.0	88.0	-0.092	1,319,558
MEDIAN	52.4	29.44	45.4	89.6	-0.008	1,925,571

Note: ** - Some Delta Pressure values were outside of range restrictions
*** - The DLS was either partially or totally out of service.

000078

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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 MAY 31, 1994

ENCLOSURE D

EFFLUENT RADIATION DISCHARGES TO THE GREAT MIAMI RIVER

000079

5668

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

PERIOD ENDING MAY 31, 1994

Introduction

Enclosure D lists monthly discharges to the Great Miami River. This information is required by the DOE/U.S. EPA Agreement Resolving Dispute Concerning Denial of Request for Extension of Time to Submit Operable Unit 2 Document and discussed in the "Addendum No. 1 to the South Groundwater Contamination Plume Removal Action Parts 2 and 3 Work Plan."

Also, enclosed is the 1993 Radiological Monitoring Data from the Addendum to the South Groundwater Contamination Plume Removal Action, Parts 2 and 3 Workplan.

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

Period Ending May 31, 1994

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45238-8705
9002 M 9501 900212

LOCATION: [SP1]
IAWWT - T108 (SWRB) Discharge
Interim Advanced Wastewater Treatment Effluent

DATE: APRIL 1994

Day	Flow (MGD)	Total Alpha (pCi/l)	Total Beta (pCi/l)	Total U (ug/l)	Total U (kgs)	TSS (mg/l)	pH (MIN) (S.U.)	pH (MAX) (S.U.)
1	0.035	**	**	< 1	0.0001	15	8.1	9.0
2	0.000							
3	0.160	0.5	9	< 1	0.0006	9	9.0	9.2
4	0.158	0.5	5	< 1	0.0006	8	9.1	9.2
5	0.142	0.5	5	< 1	0.0005	11	9.2	9.4
6	0.128	0.5	5	< 1	0.0005	8	9.1	9.4
7	0.125	**	**	< 1	0.0005	5	9.0	9.1
8	0.126	0.5	4	< 1	0.0005	4	9.0	9.1
9	0.112	0.5	4	< 1	0.0004	5	8.7	9.0
10	0.114	**	**	< 1	0.0004	5	8.4	8.7
11	0.053	**	**	< 10	0.0020	10	7.9	8.4
12	0.000							
13	0.080	**	**	< 1	0.0002	6	8.0	8.9
14	0.158	**	**	< 1	0.0002	5	8.0	8.1
15	0.163	**	**	< 1	0.0006	5	8.0	8.2
16	0.154	0.5	3	< 1	0.0006	3	7.9	8.1
17	0.087	0.5	3	< 1	0.0003	5	8.1	8.4
18	0.000							
19	0.000							
20	0.018	**	**	< 1	0.0001	4	8.4	8.5
21	0.000							
22	0.000							
23	0.000							
24	0.000							
25	0.000							
26	0.061	**	**	< 1	0.0001	2	8.1	8.6
27	0.165	**	**	< 1	0.0006	2	8.3	8.9
28	0.189	**	**	< 1	0.0007	2	8.6	8.8
29	0.035	**	**	< 1	0.0001	3	8.4	8.6
30	0.213	**	**	< 1	0.0008	2	7.7	8.5
Total	2.476				0.0105			

** Analytical results not yet available.

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

Period Ending May 31, 1994

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [SP1]
IAWWT - T109 (SWRB) Discharge
Interim Advanced Wastewater Treatment Effluent

DATE: APRIL 1994

Day	Flow (MGD)	Total Alpha (pCi/l)	Total Beta (pCi/l)	Total U (ug/l)	Total U (kgs)	TSS (mg/l)	pH (MIN) (S.U.)	pH (MAX) (S.U.)
1	0.042	**	**	< 1	0.0002	10	8.1	9.0
2	0.000							
3	0.192	0.5	5	< 1	0.0007	8	9.0	9.2
4	0.215	0.5	5	< 1	0.0008	8	9.1	9.2
5	0.213	0.5	5	< 1	0.0008	9	9.2	9.4
6	0.202	0.5	4	< 1	0.0008	6	9.1	9.4
7	0.196	**	**	< 1	0.0007	5	9.0	9.1
8	0.193	0.5	4	< 1	0.0007	4	9.0	9.1
9	0.178	0.5	4	< 1	0.0007	4	8.7	9.0
10	0.174	**	**	< 1	0.0007	4	8.4	8.7
11	0.148	**	**	< 10	0.0056	6	7.9	8.4
12	0.185	**	**	*	0.0000	4	8.0	8.7
13	0.202	**	**	< 1	0.0006	3	8.0	8.9
14	0.207	**	**	< 1	0.0006	4	8.0	8.1
15	0.208	**	**	< 1	0.0008	2	8.0	8.2
16	0.193	0.9	3	< 1	0.0007	3	7.9	8.1
17	0.116	**	**	< 1	0.0004	5	8.1	8.4
18	0.000							
19	0.000							
20	0.021	**	**	< 1	0.0001	3	8.4	8.5
21	0.000							
22	0.000							
23	0.000							
24	0.000							
25	0.000							
26	0.048	**	**	< 1	0.0000	2	8.1	8.6
27	0.101	**	**	< 1	0.0004	2	8.3	8.9
28	0.103	**	**	< 1	0.0004	0	8.6	8.8
29	0.085	**	**	< 1	0.0003	1	8.4	8.6
30	0.145	**	**	< 1	0.0005	1	7.7	8.5
Total	3.365				0.0167			

* No uranium analysis performed.
** Analytical results not yet available.

000082

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

Period Ending May 31, 1994

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [606]
SWRB Pump Station Discharge
Stormwater Retention Basin Effluent

DATE: APRIL 1994

Day	Flow (MGD)	Total Alpha (pCi/l)	Total Beta (pCi/l)	Total U (mg/l)	Total U (kgs)
1	0.619	333	< 77	0.53	1.24
2	0.000				
3	0.352	347	90	0.53	0.71
4	0.618	387	126	0.53	1.24
5	0.770	405	95	0.53	1.54
6	0.850	369	99	0.50	1.61
7	0.910	378	126	0.57	1.96
8	0.866	396	108	0.57	1.87
9	0.857	261	144	0.51	1.65
10	0.910	266	126	0.36	1.24
11	1.565	171	< 68	0.26	1.54
12	1.550	171	77	0.31	1.82
13	1.913	216	77	0.30	2.17
14	1.853	198	72	0.31	2.17
15	1.860	216	90	0.35	2.46
16	1.648	230	81	0.41	2.56
17	0.733	257	99	0.46	1.28
18	0.000				
19	0.057	450	113	0.68	0.15
20	0.243	329	< 68	0.54	0.50
21	0.425	311	113	0.53	0.85
22	0.000				
23	0.000				
24	0.000				
25	0.000				
26	0.444	441	< 68	0.60	1.01
27	0.266	252	113	0.48	0.48
28	0.603	275	63	0.47	1.07
29	1.088	270	104	0.35	1.44
30	1.475	234	90	0.34	1.90

22.475

34.45

5668

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

Period Ending May 31, 1994

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [805]
Biodenitrification Tower
BDN Tower Effluent

DATE: APRIL 1994

Day	Flow (MGD)	Total Alpha (pCi/l)	Total Beta (pCi/l)	Total U (mg/l)	Total U (kgs)
1	0.000				
2	0.000				
3	0.000				
4	0.000				
5	0.025	< 9	72	0.004	0.0004
6	0.068	9	72	0.016	0.004
7	0.069	9	< 59	0.003	0.001
8	0.070	9	< 59	0.003	0.001
9	0.071	< 9	< 59	0.003	0.001
10	0.101	< 9	< 59	0.003	0.001
11	0.122	419	450	0.83	0.38
12	0.127	495	586	0.90	0.43
13	0.122	495	541	1.0	0.46
14	0.100	234	342	0.58	0.22
15	0.093	586	450	1.1	0.39
16	0.121	676	586	1.4	0.64
17	0.116	856	721	1.5	0.66
18	0.137	721	450	1.5	0.78
19	0.126	586	432	1.4	0.67
20	0.123	676	495	1.4	0.65
21	0.088	991	541	2.0	0.67
22	0.000				
23	0.000				
24	0.000				
25	0.000				
26	0.080	***	***	1.3	0.39
27	0.080	***	***	1.7	0.51
28	0.056	***	***	1.7	0.36
29	0.129	***	***	5.3	2.59
30	0.124	***	***	3.9	1.83
Total	2.148				11.63

*** Analytical results not yet available.

000084

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

Period Ending May 31, 1994

EFFLUENT REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [605]
Biode-nitrification Tower
BDN Tower Effluent

DATE: APRIL 1994

Day	C-BOD5 (mg/l)	TSS (mg/l)	NH3-N (mg/l)	NO3-N (mg/l)	Chromium (ug/l)	Copper (ug/l)	Nickel (ug/l)	Hex-Chrom (ug/l)
1								
2								
3								
4								
5	9.52							
6		4	0.25	0.8	<6.0	<14.0	<17.0	<6.0
7								
8								
9								
10								
11								
12	12.12	10	<0.10	0.2	<6.0	<14.0	<17.0	<6.0
13								
14								
15								
16								
17								
18		5	**	<0.1	<6.0	<14.0	<17.0	<6.0
19								
20	3.80							
21								
22								
23								
24								
25								
26	2.40							
27								
28		14	0.79	0.4	<6.0	<14.0	<17.0	<6.0
29								
30								
31								

Total

** Invalid result due to sample preservative temperature excursion.

566 8

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

Period Ending May 31, 1994

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [SP2]
Stormwater Retention Basin Emergency Bypass
SWRB Bypass Effluent

DATE: APRIL 1994

Day	Flow (MGD)
1	0.542
2	0.000
3	0.000
4	0.373
5	0.415
6	0.520
7	0.589
8	0.547
9	0.567
10	0.622
11	1.364
12	1.365
13	1.631
14	1.488
15	1.489
16	1.301
17	0.530
18	0.000
19	0.057
20	0.204
21	0.425
22	0.000
23	0.000
24	0.000
25	0.000
26	0.337
27	0.000
28	0.311
29	0.968
30	1.117

Total 16.762

000086

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

Period Ending May 31, 1994

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: Valve House
South Groundwater Contamination Plume

DATE: APRIL 1994

<u>Day</u>	<u>Flow (MGD)</u>	<u>Total U (ug/l)</u>	<u>Total U (kgs)</u>
1	2.136	14	0.11
2	2.205	14	0.12
3	2.256	18	0.16
4	2.176	8	0.07
5	2.595	13	0.12
6	2.108	11	0.09
7	1.936	14	0.10
8	2.169	10	0.08
9	2.830	13	0.14
10	2.247	6	0.05
11	2.506	10	0.10
12	2.081	13	0.10
13	2.166	7	0.06
14	2.227	6	0.05
15	2.228	7	0.06
16	2.051	15	0.12
17	2.100	9	0.07
18	2.052	* 10	0.08
19	2.189	2	0.01
20	2.134	2	0.01
21	2.072	12	0.09
22	2.234	* 10	0.08
23	2.074	* 10	0.08
24	2.063	* 10	0.08
25	2.114	* 10	0.08
26	2.163	13	0.11
27	2.584	7	0.06
28	1.651	4	0.03
29	2.170	14	0.12
30	2.073	11	0.09
Total	65.590		2.52

* Uranium analysis not performed; monthly average concentration used.

000087

003668

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

Period Ending May 31, 1994

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [SP3]
Valve House
South Plume/Stormwater Retention Basin

DATE: APRIL 1994

Day	Flow (MGD)	Total Alpha (pCi/l)	Total Beta (pCi/l)	Total U (ug/l)	Total U (kgs)	TSS (mg/l)	pH (Grab (S.U.))
1	2.755	68	< 77	130	1.35		7.4
2	2.205	< 14	< 77	13	0.11		7.2
3	2.608	< 14	< 77	11	0.11		7.1
4	2.794	38	< 77	60	0.63		7.2
5	3.365	54	< 77	94	1.20		7.3
6	2.958	59	< 77	100	1.12		7.4
7	2.846	77	< 77	120	1.29	5.8	7.1
8	3.035	81	77	120	1.38		6.9
9	3.687	54	< 77	110	1.53		7.4
10	3.157	41	< 77	97	1.16		7.5
11	4.071	54	< 72	100	1.54		7.4
12	3.631	63	< 72	130	1.79		7.3
13	4.079	59	< 72	130	2.01		7.5
14	4.080	59	< 68	120	1.85	11.2	7.1
15	4.088	72	< 68	150	2.32		6.8
16	3.699	104	< 68	150	2.10		7.1
17	2.833	45	< 68	96	1.03		7.3
18	2.052	< 14	< 68	17	0.13		7.3
19	2.246	< 14	< 68	30	0.25		7.3
20	2.377	50	< 68	95	0.85		7.3
21	2.497	14	< 68	19	0.18	19.6	7.2
22	2.234	< 14	< 68	16	0.14		7.3
23	2.074	< 14	< 68	15	0.12		7.3
24	2.063	< 14	< 68	14	0.11		7.3
25	2.114	23	< 68	60	0.48		7.1
26	2.607	27	< 68	45	0.44		7.2
27	2.850	< 14	< 68	52	0.56		7.2
28	2.254	18	< 68	42	0.36	2.0	7.4
29	3.258	95	< 63	140	1.73		7.3
30	3.548	63	< 63	110	1.48		7.3
Total	88.065				29.34		

* Effective 3/11/94, the SWRB discharges were combined with the South Plume:

000088

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

Period Ending May 31, 1994

EFFLUENT REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Wiley Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [SP4]
Parshall Flume
Effluent Downstream of Manhole 176B

DATE: APRIL 1994

Day	DO (mg/l)	IRON (mg/l)	MANGANESE (mg/l)
1			
2			
3			
4			
5			
6			
7	10.1	0.71	0.1
8			
9			
10			
11			
12			
13			
14	10.1	0.68	<0.1
15			
16			
17			
18			
19			
20			
21	8.9	0.92	0.2
22			
23			
24			
25			
26			
27			
28	9.5	0.68	0.1
29			
30			

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EFFLUENT RADIATION REPORT

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U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
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LOCATION: Valve House
South Groundwater Contamination Plume **

DATE: MARCH 1994 [REVISED]

Day	Flow (MGD)	Total U (g/l) ***	Total U (kgs)
1	2.139	13	0.11
2	1.776	13	0.09
3	2.175	13	0.11
4	2.292	13	0.11
5	2.037	13	0.10
6	1.961	13	0.10
7	2.415	13	0.12
8	2.889	13	0.14
9	1.230	13	0.06
10	1.597	13	0.08
11	1.451	13	0.07
12	1.291	13	0.06
13	1.308	13	0.06
14	1.843	13	0.09
15	2.895	13	0.14
16	1.353	13	0.07
17	2.118	13	0.10
18	2.453	13	0.12
19	1.772	13	0.09
20	2.062	13	0.10
21	2.262	13	0.11
22	2.557	13	0.13
23	2.620	13	0.13
24	1.447	13	0.07
25	2.049	13	0.10
26	1.992	13	0.10
27	2.245	13	0.11
28	2.135	13	0.10
29	2.548	13	0.13
30	2.573	13	0.13
31	2.215	13	0.11
Total	63.700		3.13

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** Effective 3/11/94, the SWRB discharges were combined with the South Plume.
*** Concentration of 13 ug/l is based on limited analyses performed.

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**CONSOLIDATED CONSENT AGREEMENT FACILITY
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MONTHLY PROGRESS REPORT**

Period Ending May 31, 1994

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [SP3]
Valve House
South Plume/Stormwater Retention Basin ***

DATE: MARCH 1994 [REVISED]

Day	Flow (MGD)	Total Alpha (pCi/l)	Total Beta (pCi/l)	Total U (ug/l)	Total U (kgs)	TSS (mg/l)	pH (Grab) (S.U.)
1	2.139	< 14	< 72	13	0.11		7.5
2	1.778	< 14	< 72	13	0.09		7.6
3	2.175	< 14	< 72	10	0.08	3.0	7.6
4	2.292	< 14	< 72	12	0.10		7.3
5	2.037	< 14	< 72	13	0.10		7.5
6	1.981	< 14	< 72	14	0.10		7.3
7	2.415	< 14	< 72	14	0.13		7.6
8	2.899	< 14	< 72	14	0.15		**
9	1.230	< 14	< 72	14	0.07		7.5
10	1.597	< 14	< 72	13	0.08	3.4	7.5
11	2.114	77	< 72	150	1.20		7.6
12	2.459	203	< 72	270	2.51		7.8
13	2.489	176	< 72	270	2.52		7.7
14	2.858	136	81	240	2.59		7.5
15	3.227	41	< 72	77	0.94		7.6
16	1.442	< 14	< 72	14	0.08		7.8
17	2.178	< 14	< 72	13	0.11	9.6	7.5
18	2.552	< 14	< 72	14	0.14		7.7
19	1.772	< 14	< 72	14	0.09		7.6
20	2.062	< 14	< 72	14	0.11		7.5
21	2.370	< 14	< 72	13	0.12		7.5
22	2.642	14	< 72	14	0.14		7.5
23	2.958	32	< 72	60	0.67		7.6
24	1.901	32	< 72	86	0.62	2.8	7.8
25	2.155	14	< 77	14	0.11		7.8
26	2.361	27	< 77	43	0.38		7.5
27	2.783	68	< 77	140	1.47		7.4
28	2.567	45	< 77	89	0.86		7.5
29	2.923	36	< 77	75	0.83		7.5
30	3.344	86	< 77	160	2.02		7.5
31	2.907	86	< 77	160	1.76		7.6
Total	72.551				20.29		

** No reading taken.

*** Effective 3/11/94, the SWRB discharges were combined with the South Plume.

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 U.S. Department of Energy
 7400 Willey Road, P.O. Box 398705
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EFFLUENT RADIATION REPORT 1993

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South Plume Valve House

Monthly/Quarterly Composites

Radionuclide	Jan (pCi/l)	Feb (pCi/l)	Mar (pCi/l)	Apr (pCi/l)	May (pCi/l)	Jun (pCi/l)	Jul (pCi/l)	Aug (pCi/l)	Sep (pCi/l)	Oct (pCi/l)	Nov (pCi/l)	Dec (pCi/l)	MIN. (pCi/l)	MAX. (pCi/l)	AVG.* (pCi/l)	DOE DCG (pCi/l)	% DOE DCG #
Ac-228									0.49 <	0.34	0.46	0.63 *	0.34	0.63	0.47	6E+04	0.0008
Ra-224									< 0.0609	0.0644	0.30	0.17 *	0.06	0.30	0.14	4E+02	0.0348
Ra-226									2.0 <	1.90	2.2 <	1.4 *	1.40	2.20	1.91	1E+02	1.9112
Ra-228									0.49 <	0.34	0.46	0.63 *	0.34	0.63	0.47	1E+02	0.4668
Th-228									< 0.0609	< 0.0644	< 0.3000	< 0.1700 *	0.06	0.30	0.14	4E+02	0.0348
Th-230									0.1870	0.9780	< 0.3700	< 0.2900 *	0.19	0.98	0.47	3E+02	0.1561
Th-231									0.39	0.26	0.23	0.20 *	0.20	0.39	0.10	1E+05	0.0001
Th-232									< 0.0533	< 0.0506	< 0.2000	< 0.1200 *	0.05	0.20	0.10	5E+01	0.1998
Th-234									8.10	5.61	4.84	4.48 *	4.48	8.10	0.14	1E+04	0.0014
U-234									2.88	4.31	2.63	2.27 *	2.27	4.31	3.10	5E+02	0.6208
U-235									0.39	0.26	0.23	0.20 *	0.20	0.39	0.28	6E+02	0.0467
U-236									0.21	0.14	< 0.01	< 0.01 *	0.01	0.21	0.10	5E+02	0.0209
U-238									8.10	5.61	4.84	4.48 *	4.48	8.10	5.97	6E+02	0.9955

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AVG.* is flow-weighted and shown as <, if more than one quarter of the values are less than the detection limit.

% DOE DCG is based on the average concentration for the previous twelve months. AE - Insufficient data available, results will be included in year-end report.

* September data compiled for period from 8/27/93 to 9/30/93.

pCi/l x l

Radionuclide	Jan pCi	Feb pCi	Mar pCi	Apr pCi	May pCi	Jun pCi	Jul pCi	Aug pCi	Sep pCi	Oct pCi	Nov pCi	Dec pCi	TOTAL pCi-Curies	TOTAL Curies
Ac-228													5.7E+08	0.00057
Radium-224									2E+08	1E+08	1E+08	1E+08	1.7E+08	1.7E-04
Radium-226									2E+07	2E+07	9E+07	4E+07	1.7E+08	1.7E-04
Radium-228									7E+08	6E+08	6E+08	3E+08	2.3E+09	2.3E-03
Thorium-228									2E+08	1E+08	1E+08	1E+08	5.7E+08	5.7E-04
Thorium-230									2E+07	2E+07	9E+07	4E+07	1.7E+08	1.7E-04
Thorium-231									7E+07	3E+08	1E+08	6E+07	5.7E+08	5.7E-04
Thorium-232									1E+08	9E+07	6E+07	3E+07	3.2E+08	3.2E-04
Thorium-234									2E+07	2E+07	1E+09	1E+09	2.4E+09	2.4E-03
Uranium-234									3E+09	2E+09	8E+08	5E+08	6.1E+09	6.1E-03
Uranium-235									1E+09	1E+09	8E+08	5E+08	3.8E+09	3.8E-03
Uranium-236									1E+08	9E+07	7E+07	5E+07	3.4E+08	3.4E-04
Uranium-238									8E+07	5E+07	3E+06	2E+06	1.2E+08	1.2E-04
									3E+09	2E+09	1E+09	1E+09	7.3E+09	7.3E-03

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