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PROGRESS REPORT OPERABLE UNIT 5 ENVIRONMENTAL MEDIA JULY 1992

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FACT SHEET

Fernald Project

Remedial Investigation/ Feasibility Study

PROGRESS REPORT JULY 1992

Operable Unit 5
ENVIRONMENTAL MEDIA

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Introduction

The Remedial Investigation/Feasibility Study (RI/FS) is the blueprint for cleanup at the U.S. Department of Energy's Fernald Environmental Management Project (FEMP). The nature and extent of contamination at the FEMP and surrounding areas is being thoroughly investigated so that appropriate remedial actions can be formulated and implemented.

The FEMP has been divided into five sections, known as Operable Units, for environmental investigation and cleanup. The Operable Units were defined based on their location or the potential for similar technologies to be used in the ultimate cleanup.

During the course of the RI/FS effort, certain conditions are occasionally identified which call for more immediate action. These actions are called "Removal Actions" and are initiated when there is a need to accelerate cleanup activities to address releases or potential releases of hazardous substances. Removal Actions are coordinated with the U.S. EPA and the Ohio EPA.

Following is a progress report on Operable Unit 5 including its history, the current status of RI/FS activities, cleanup alternatives under consideration, and work being done to alleviate near-term concerns.

Background

Operable Unit 5 encompasses the environmental media at the FEMP and surrounding areas that could be impacted by the facility. While other Operable Units focus on specific waste facilities or defined areas, Operable Unit 5 is concerned with those environments that could be affected by the FEMP. "Environmental media" includes the groundwater, surface water, soils, sediments, air, vegetation and wildlife throughout the FEMP and surrounding areas. The groundwater includes the Great Miami Buried Valley Aquifer, a source of water in the vicinity of the FEMP. Surface waters include the Great Miami River, Paddy's Run, a small stream which runs along the western boundary of the FEMP, and the FEMP's storm sewer outfall ditch. Sediments in Operable Unit 5 include solid materials carried in stormwater runoff or plant effluent discharges to surface waters or drainage ditches. Soils on and off the FEMP boundaries also are being investigated for possible contamination due to past discharges or air emissions.

RI/FS Activities

Paddy's Run Seepage Investigation Study: An investigation continues to better determine how Paddy's Run interfaces with the Great Miami Buried Valley Aquifer. The study is evaluating the impact that leakage of surface water through the bed of Paddy's Run might be having on local groundwater flow. A series of wells have been installed along Paddy's Run, and sampling activities are in progress to determine the extent of any contamination in the aquifer at that location. Additional studies of the flow of the creek itself are under way to help determine what, if any, relationship exists between any identified contaminants in the aquifer at that location and the intermittent surface water flow conditions in the creek. This information is important to determine what type of response action may be warranted. Collected samples will be analyzed and resulting data will be included in the final Remedial Investigation and Feasibility Study reports for Operable Unit 5.

Miscellaneous Additional Wells Program: Sixteen additional wells recently were installed around the perimeter of the FEMP for the purpose of filling data gaps which have been defined through recent groundwater sampling activities. Samples collected from the 16 wells will be analyzed, and the results will be examined to determine if further contingency wells will be required.

Operable Unit 5 Work Plan Addendum: Soil and perched groundwater sampling will be conducted in the following former production areas: Plant 1 Pad; southeast quadrant of the production area; fire training area; KC-2 Warehouse area; scrap metal area; electrical substation; K-65 slurry line, and the clearwell line. The Operable Unit 5 Work Plan Addendum containing this scope of work was transmitted to the U.S. EPA and Ohio EPA in April 1992, for review and approval. EPA comments are presently being addressed.

Reports: DOE submitted a revised Soil Washing Treatability Study Work Plan to the U.S. EPA on March 4, 1992, which responds to U.S. EPA comments on the previously submitted plan. The U.S. EPA approved the DOE responses, and those comments are currently being incorporated into the Treatability Work Plan designed to examine physical and chemical separation of uranium from soils. Significant cost and schedule improvements could be realized in the implementation of final remedial actions if an implementable soil washing treatment technology can be identified. Data generated from the study will be used to support the completion of the Operable Unit 5 Feasibility Study. The preparation of other Operable Unit 5 RI/FS reports is proceeding consistent with the schedules set forth in the 1991 Amended Consent Agreement.

Removal Actions

South Groundwater Contamination Plume (Removal Action No. 3): The purpose of this Removal Action is to protect public health by limiting access to the use of uranium-contaminated groundwater in an area south of the FEMP. This Removal Action is broken into five parts.

Part 1 includes installation of an alternate water source to an industry affected by the contamination plume. Part 1 construction began May 13, 1992. This portion of the project involves the installation of production wells outside the plume area and a water distribution system to the affected industry. Analysis of samples taken from the selected well site to determine the adequacy of the quality and quantity of the extracted water showed the groundwater in the well field area is within natural background levels for uranium and other chemical parameters. This portion of Part 1 of the Removal Action, originally scheduled for completion by July 14, 1992, is now scheduled to be operational by December 7, 1992. The DOE requested and the U.S. EPA approved this schedule extension for Part 1, due to the DOE's easement acquisition difficulties. Construction will be completed when access to all required properties is achieved. Several property owners have denied access and/or refused offers to purchase easements required for Part 1 construction. Government condemnation proceedings are in progress to acquire access to those easements.

Another affected industry will be provided with an alternate water supply by being tied into the proposed public water system.

Part 2 involves the installation of a groundwater recovery well system to pump groundwater from the South Plume through a force main and back to the FEMP for monitoring and discharge to the Great Miami River. As a result of information obtained from a separate remedial investigation that is being performed at the Paddy's Run Road Site (PRRS), additional concerns have been identified in the South Plume area.

The PRRS consists of several industries that in past years discharged both organics and inorganics which have now found their way to the Great Miami Buried Valley Aquifer. The PRRS plume extends to very near the location of the proposed Part 2 well field as described in the November 1990 South Plume Engineering Evaluation/Cost Analysis (EE/CA). Operation of a uranium recovery well field at the location originally described in the EE/CA could result in the spreading and/or extraction and discharge of contaminants from the PRRS plume to the Great Miami River.

As a result of these conditions, the Part 2 well field was relocated to an area north of the plume being investigated by PRRS. An addendum to the EE/CA entitled "Explanation of Significant Differences" was prepared to reflect the relocation of the well field. That document is available for review in the Public Environmental Information Center.

Use of the FEMP's current effluent outfall pipeline to the Great Miami River will be discontinued due to its age and limited capacity to handle future flow. A new effluent outfall pipeline will be installed under Part 2 of this Removal Action. The new outfall pipeline will parallel the existing outfall pipeline to the Great Miami River.

Part 2 work also includes increasing the pump-out capacity at the Stormwater Retention Basin to reduce the potential for future overflow of the basin.

The drawings and specifications for the force main, the new outfall pipeline, and for providing increased pump-out capacity at the Stormwater Retention Basin, are complete. Construction on this portion of the project is expected to begin in July 1992. The groundwater recovery well system is expected to be operational by January 1993.

A Dissolved Oxygen System also will be installed under Part 2. It has been determined that the groundwater to be extracted under Part 2 of this Removal Action has a low dissolved oxygen content. The FEMP's National Pollutant Discharge Elimination System (NPDES) permit requires FEMP wastewater to be discharged at a minimum of five parts of dissolved oxygen per million parts of water (ppm). Groundwater extracted under Part 2 will be aerated prior to discharge to the Great Miami River in order to comply with the FEMP's current NPDES permit.

Part 3 involves construction of an Interim Advanced Wastewater Treatment (IAWWT) system. The IAWWT system will remove uranium from site wastewater streams and, by doing so, will reduce the amount of uranium discharged to the Great Miami River. The design of the IAWWT system was modified to incorporate the additional treatment capacity required to address the relocation of the Part 2 well field. The new location is in an area of higher uranium concentration which means that more uranium will have to be removed from site wastewater streams to achieve the desired reduction of uranium discharges to the river.

Two trailer-mounted IAWWT facilities were fabricated off site and have been delivered to the FEMP. These facilities and associated support systems will comprise the IAWWT unit to be located near the Stormwater Retention Basin. Construction activities began in February 1992, and are nearing completion.

Construction of a second IAWWT unit to be installed in the FEMP's existing Biodenitrification Effluent Treatment building is nearing completion. The IAWWT system, which includes the unit at the Stormwater Retention Basin and at the Biodenitrification Effluent Treatment building, is scheduled to be operational by July 30, 1992.

Part 4 of the Removal Action involves groundwater monitoring and institutional controls to prevent the use of contaminated groundwater. This activity is being implemented through the existing FEMP Groundwater Monitoring Program. The program has been expanded to include more frequent monitoring of private wells located near areas of known contamination.

Part 5 involves additional groundwater investigations in the vicinity of the South Plume. Additional investigations will be performed under Part 5 to identify the location and extent of any remaining contamination attributable to the FEMP in the groundwater south (downgradient) of the recovery wells to be installed under Part 2.

The Part 5 investigation will include Hydropunch sampling, a soil vapor survey if required, sampling of existing monitoring wells, and groundwater modeling activities. Hydropunching is an efficient method for extracting groundwater samples without the expense of installing wells. A soil vapor survey is used to help determine the presence of volatile organic compounds in subsurface soils and groundwater.

Because the U.S. EPA has issued a proposed limit of 20 parts per billion (ppb) for uranium in drinking water, the investigation will attempt to identify the location of the contamination in the aquifer exceeding the 20 ppb level. The information obtained will be used to allow the FEMP to limit access to this water until additional response actions for this area can be implemented.

Collect Uncontrolled Production Area Runoff - Northeast (Removal Action No. 16): The scope of this Removal Action is to collect stormwater runoff from perimeter areas of the 136-acre production area which are not presently draining into the Stormwater Retention Basin. The work plan for this Removal Action was submitted to U.S. EPA on March 2, 1992. The DOE received U.S. EPA comments on April 7, 1992. Those comments were addressed and a revised work plan was submitted to the U.S. EPA on May 21, 1992. The design package was issued for bid in June 1992. Construction is expected to begin by August 1992. Construction is scheduled for completion by August 1993.

Cleanup Alternatives

While a range of alternatives are under consideration for dealing with contaminated groundwater, the most viable alternative currently appears to be pumping it out of the ground and returning it to the FEMP for possible treatment and discharge to the Great Miami River.

Cleanup alternatives for soils and sediments include removing and treating them for disposal either at the FEMP or an off-site disposal facility, or treating contaminated soils and sediments in place and isolating the materials from the environment with a protective covering system.

More information about Operable Unit 5 is available in the Public Environmental Information Center (PEIC), where Fernald Environmental Management Project cleanup documents are kept in the Administrative Record. The PEIC is located in the JAMTEK building, 10845 Hamilton-Cleves Highway, Harrison, Ohio, 45030. The telephone number is (513) 738-0164.