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DISAPPROVAL OF THE OU 5 PSP FOR THE SOUTH FIELD GROUNDWATER EXTRACTION SYSTEM

06/19/95

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DISAPPROVAL

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FILE:

REPLY TO THE ATTENTION OF:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUN 19 1995

Mr. Jack R. Craig
United States Department of Energy
Feed Materials Production Center
P.O. Box 398705
Cincinnati, Ohio 45239-8705

HRE-8J

RE: Disapproval of the OU 5 PSP for the South Field Groundwater Extraction System

Dear Mr. Craig:

The United States Environmental Protection Agency (U.S. EPA) has completed its review of the Operable Unit (OU) 5 Project Specific Plan (PSP) and Functional Requirements and Design Basis document for the installation of the South Field groundwater extraction system. These documents focus on the installation of eight new recovery wells and the conversion of an existing pumping test well for groundwater extraction. Although U.S. EPA supports installation of the groundwater extraction system, the documents provided lack much detail regarding the justification for the location of the wells, information on how the system will be operated and effectiveness determined, and it does not commit to a fixed schedule of activities.

Therefore, U.S. EPA hereby disapproves the OU 5 PSP for the South Field extraction system pending incorporation of adequate responses into the revised documents. The United States Department of Energy must submit revised documents and responses to comments within thirty (30) days receipt of this letter.

Please contact me at (312) 886-0992 if you have any questions.

Sincerely,

James A. Saric, Remedial Project Manager
Technical Enforcement Section #1
RCRA Enforcement Branch

(JANKE (RJ)
PARTIAL ACTION RESPONSE
TO Q-0964
(8910)

Enclosure

cc: Tom Schneider, OEPA-SWDO
Jack Baublitz, U.S. DOE-HDQ
Don Ofte, FERMCO
Paul Clay, FERMCO
Terry Hagen, FERMCO

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REVIEW OF THE "PROJECT-SPECIFIC PLAN FOR THE INSTALLATION OF THE SOUTHFIELD EXTRACTION SYSTEM" FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.2 Page #: 3 Line #: 35
Original Specific Comment #: 1
Comment: The text states that groundwater extracted from the aquifer will be treated as necessary to meet the discharge requirements for release to the Great Miami River. It is stated in the proposed plan that groundwater will be routed to the treatment units up to the treatment unit capacity on a priority (that is, most contaminated first) basis. The text should be revised to more closely reflect the requirements of the record of decision (ROD).

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.4 Page #: 5 Line #: 18
Original Specific Comment #: 2
Comment: The text states that the implementation of this project is subject to funding availability and that it is possible that the lack of funding could cause the project to revert to the original operable unit (OU) 5 schedule. After the project-specific plan and its schedule are approved, deviations due to a lack of funding are not sufficient justification for noncompliance with the schedule. The text should be revised to eliminate all references to extending schedules due to a lack of funding.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.3 Page #: 24 Line #: 37
Original Specific Comment #: 3
Comment: Desorption batch tests will be conducted on soil samples collected from the exploratory boreholes. The desorption batch test method that will be used should be provided or referenced if the U.S. Environmental Protection Agency (U.S. EPA) approved it in the past.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.4 Page #: 27 Line #: 11
Original Specific Comment #: 4
Comment: The stated dilution factor of about 4 that occurs in Well 31550 appears excessive indicating that the extraction system design may be inefficient. This lack of efficiency could result in the dilution and subsequent nontreatment of contaminated groundwater. Additionally, the groundwater modeling estimates presented in Appendix F of the "South Field Extraction System Functional Requirements and Design Basis Document" indicate that the dilution factor present in

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the extraction wells is considerably greater than 4. The screen length listed in Section 4.1 should be reevaluated so that minimal dilution results from extracting contaminated groundwater, while continuing to extract all groundwater that has a uranium concentration above 20 parts per billion (ppb).

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.5 Page #: 28 Line #: 4
Original Specific Comment #: 5
Comment: The text states that the remedial action work plan will address specifics concerning the groundwater monitoring that will occur to evaluate how effective the extraction system is in meeting its objectives. These details should be presented early in the remedial design process so that they can be included as part of the design and can begin functioning during system startup. The text should be revised so that specifics concerning monitoring the extraction system effectiveness are incorporated in the remedial design work plan.

REVIEW OF THE OF THE SOUTHFIELD EXTRACTION SYSTEM FUNCTIONAL REQUIREMENTS AND DESIGN BASIS DOCUMENT

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

GENERAL COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 1
Comment: The document does not address the frequency of sampling to be conducted at the well head to determine if the extracted groundwater should be routed to the treatment unit, the Great Miami River, or if it should be reinjected. This item was also not addressed in the project-specific plan for the installation of the Southfield extraction system. The U.S. Department of Energy (DOE) should address this monitoring schedule in detail.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 2
Comment: The document does not address which wells will be sampled or the groundwater monitoring schedule to be used to determine the effectiveness of the extraction system. This evaluation is a vital component for future decisions and should be included in the design.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 3
Comment: The analysis presented in Appendix F indicates that when DOE's design is modeled, it results in the removal of a significant volume of noncontaminated groundwater. This volume of noncontaminated groundwater results in a dilution factor ranging from 8 to 50. This dilution factor appears to be excessive and may reflect an inefficient extraction well design. DOE should examine the depth of the proposed extraction wells and the extraction rate to ensure maximum system efficiency.

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.6.3 Page #: 1-9 Line #: NA
Original Specific Comment #: 1
Comment: This section does not include an evaluation of the effectiveness of the extraction system. Effectiveness of hydraulically capturing the contaminant plume and the removal of the contaminants must be addressed. The details

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presented in Sections 2.5.1 and 5.1.2 are not adequate. In most cases water level or water quality measurements are being collected at a single horizontal point. This is not sufficient to evaluate either groundwater flow direction or gradient, which are essential to determine if the aquifer is responding to the modeling and design of the extraction system. This information should be added to the functional requirements.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4 Page #: 4-1 Line #: NA
Original Specific Comment #: 2
Comment: The piping and instrumentation diagrams presented in Appendix E seem to omit sampling ports in the existing south field extraction system (SFES) force main before and after treatment in the south plume valve house. In addition, a sampling port is not present after water exits the SFES valve house and mixes with water discharged from other wells prior to its discharge to the Great Miami River. Sampling at these locations should be conducted to evaluate the effectiveness of the treatment as well as to determine the loading to the Great Miami River. DOE should reevaluate the design and consider these potential sampling locations.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.2 Page #: 4-1 Line #: NA
Original Specific Comment #: 3
Comment: The site plan found in Appendix D does not appear to match the piping and instrumentation diagrams presented in Appendix E. The site diagram in Appendix D states that one line to treatment and one line to discharge will extend from each well. The diagram in Appendix E shows that treatment and discharge lines from individual wells are combined prior to reaching a treatment or discharge point. The drawings and diagrams should be checked for accuracy and revised accordingly.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.2 Page #: 4-1 Line #: NA
Original Specific Comment #: 4
Comment: Sheet 2 of 2 of the piping and instrumentation diagrams in Appendix E indicates that extracted groundwater from extraction wells 13, 14, 15, 16, and 17 goes to "pumps" or to treatment. It is unclear to what the word "pumps" refers. At this point, U.S. Environmental Protection Agency (U.S. EPA) has not approved reinjection. In addition, no extracted groundwater with a concentration above 20 parts per billion (ppb) is suitable for reinjection without treatment. DOE should review the diagrams for accuracy and consistency with the objectives stated in the proposed plan.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.2 Page #: 4-1 Line #: NA
Original Specific Comment #: 5
Comment: Sheet 2 of 2 of the piping and instrumentation diagrams in Appendix E indicates that extracted groundwater from extraction wells 13, 14, 15, 16, and 17 can either be routed to "pumps" or to treatment. Groundwater with a concentration of greater than 20 ppb cannot be reinjected to the aquifer. Therefore, the drawing indicates that all groundwater with a uranium concentration greater than 20 ppb that is extracted from these wells will be combined and then combined again with the with groundwater extracted from the remaining wells. The groundwater will then be routed to the south plume valve house for treatment. This situation does not allow for the priority treatment of contaminated groundwater on a well-by-well basis. Also, this method does not meet the objectives of the proposed plan that require extracted groundwater to be routed to treatment or discharge based on its uranium concentration at the extraction point. To meet the objective of the proposed plan and to allow for reinjection, it appears three lines should be installed; one each to route groundwater to treatment, discharge, and reinjection. DOE should review the diagrams for accuracy and consistency with the objectives stated in the proposed plan.

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