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REQUEST FOR APPROVAL OF RESPONSE TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY QUESTION OF THE SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT

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DOE-FN EPA
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LETTER

Department of Energy
Fernald Environmental Management Project
P.O. Box 398705
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MAY 25 1994
DOE-1767-94

Mr. James A. Saric, Remedial Project Manager
U. S. Environmental Protection Agency
Region V - 5HRE-8J
77 W. Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
40 South Main Street
Dayton, Ohio 45402-2086

Dear Mr. Saric and Mr. Schneider:

REQUEST FOR APPROVAL OF RESPONSE TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY QUESTIONS ON THE SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT

References: 1. Letter, DOE-0835-94, J. R. Craig to J. A. Saric, "Transmittal of Response to Comments on the Screening Level Ecological Risk Assessment for the Site-Wide Ecological Risk Assessment," dated January 25, 1994.

2. Memorandum, B. Mazur to J. A. Saric, "General Discussion Points Pertaining to the Screening Level Ecological Risk Assessment for the FEMP," dated February 7, 1994; and Memorandum, E. Helmer to J. A. Saric, "Screening Level Ecological Risk Assessment General Topics of Discussion for Responses to Comments FEMP, Ohio," dated February 4, 1994.

The Department of Energy, Fernald Field Office (DOE-FN) is enclosing a written response to several specific questions raised by the United States Environmental Protection Agency (USEPA) reviewers regarding the Screening Level Ecological Risk Assessment, which was submitted in August 1993. Although DOE-FN responded satisfactorily to the majority of the agency's original comments (Reference 1), USEPA stated that some comment responses required additional clarification (Reference 2). These questions were discussed during a meeting attended by USEPA, DOE-FN, and the Fernald Environmental Restoration Management Corporation (FERMCO) personnel in Chicago on February 15, 1994.

The questions were resolved with the understanding that DOE-FN would provide a written response formalizing the agreement reached during the meeting. The response presents the results of the meeting, which are being incorporated into the Site-Wide Ecological Risk Assessment (Appendix B of the Draft Remedial Investigation Report for Operable Unit 5 [OU5]; the RI Report will be submitted to USEPA on June 24, 1994). USEPA's approval of the response will complete the SLERA and enable OU5 to complete the Site-Wide Ecological Risk Assessment according to Region V guidance.

If you have questions or comments, please contact Pete Yerace at (513) 648-3161.

Sincerely,

for Jack R. Craig
Fernald Remedial Action
Project Manager

FN:Yerace

Enclosure: As Stated

cc w/enc:

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Resolution of U.S. EPA Questions Regarding the *Screening Level Ecological Risk Assessment*

One of Operable Unit 5's commitments — as stipulated in the Amended Consent Agreement — is to prepare a Site-Wide Ecological Risk Assessment as part of its Remedial Investigation Report. Ms. Eileen Helmer of U.S. EPA Region V provided DOE-FN and FERMCO Operable Unit 5 personnel with a guidance document prepared by Region V that outlines the framework for conducting ecological risk assessments. The guidance suggests that a Screening Level Ecological Risk Assessment (SLERA) be one of the initial steps taken to assess ecological conditions at a site. A meeting was held at the FEMP in February 1993 with Ms. Helmer to discuss how the FEMP proposed to conduct the SLERA and its successor document, the Site-Wide Ecological Risk Assessment. The results of this meeting were later incorporated into the *FEMP's Strategy for Assessing Ecological Risk,* which was approved by U.S. EPA. A basic tenet of the strategy states that both the SLERA and the Site-Wide Ecological Risk Assessment would focus on those on-property and off-property areas which are not likely to require remediation to address human health concerns.

The primary purpose of a SLERA is to examine available site-related analytical data and to compare these data to information from literature, U.S. EPA or State Ambient Water Quality Criteria, and other pertinent sources of information to evaluate the relative risk to ecological receptors from FEMP-related contamination. Furthermore, a SLERA indicates if additional data collection is required in order to better define potential risk to ecological receptors.

DOE-FN submitted the SLERA to U.S. EPA in August 1993 and received the agency's comments (along with additional comments from U.S. Fish & Wildlife) in November 1993. DOE-FN submitted responses to U.S EPA comments in January 1994. While the agency agreed that DOE-FN satisfactorily addressed the majority of the original comments, U.S. EPA did raise several questions which required resolution.

During a meeting in Chicago on February 15, 1994 to discuss the questions, U.S. EPA emphasized that it was not their intent that DOE-FN revise the SLERA. However, the topics under discussion had to be resolved so the Site-Wide Ecological Risk Assessment — which would be based in large measure on the SLERA — would be consistent with Region V guidance.

the very conservative assumptions made in developing values for a key input parameter.

It was explained that with the exception of radium (transfer coefficient = 0.01), specific soil-to-plant-to-insect transfer coefficients could not be identified for other radionuclides. Therefore, a very conservative transfer coefficient of 1.0 was assumed for the soil-to-plant-to-insect pathway. In other words, the model assumed that concentrations of radionuclides that would be present in insects would be equal to the concentration of radiological contaminants present in the soil. As summarized in the SLERA, studies performed on the movement of various radionuclides, including uranium, through aquatic and terrestrial ecosystems have indicated that assimilation of these materials into tissue at each trophic level is small, generally decreasing an order of magnitude with each successive trophic level.

Based on the results of these studies, a soil-to-plant-to-insect transfer coefficient of 0.01 (consistent with the value for radium) could have been used in the SLERA models. However, despite having used the conservative value of 1.0, only one area on the FEMP contained concentrations of radiological contaminants that potentially resulted in a total dose to ecological receptors that exceeded the respective benchmark values. As a consequence, it was agreed that additional site-specific studies were not necessary to characterize the potential risk from radiological contaminants to ecological receptors within this pathway.

4) The view of U.S. EPA reviewers was the SLERA did not fully incorporate the results from some previous biological studies and surveys conducted at the FEMP. In particular, U.S. EPA noted that the authors of a report summarizing the results of a 1987 survey interpreted their results to indicate that activities at the FEMP may have adversely impacted the macroinvertebrate community in Paddys Run. U.S. EPA suggested that additional studies (e.g., field or laboratory toxicity tests) might be needed to better characterize the potential risks to organisms inhabiting this creek.

This issue was resolved through a thorough discussion of the results of other studies conducted on the Paddys Run macroinvertebrate community and the physical nature of this creek. The interpretation of the results of the other studies indicated that — contrary to the 1987 study — the macroinvertebrate community appeared to be typical of other small streams in the area.

5) U.S. EPA expressed concern that actions taken by DOE-FN to control or remove contaminants were not adequately described in the SLERA. This issue was resolved by the participants agreeing that the Site-Wide Ecological Risk Assessment would summarize actions that have been taken to control and prevent the movement of contaminants from source areas to areas inhabited by ecological receptors.

Two examples of actions which will be summarized in the Site-Wide Ecological Risk Assessment are Removal Action 2, which increased the extent of surface water runoff control in the waste pit area, thus reducing the movement of contaminants into Paddys Run, and Removal Action 14, which involves the removal of soil with high concentrations of uranium near the sewage treatment plant. Reference will also be made in the text to more detailed descriptions of removal actions in specific sections of the OU5 RI Report.

Participants at the meeting reached an additional agreement that the Site-Wide Ecological Risk Assessment will assess only surface soil data from locations where removal actions have not occurred. Contaminant concentrations in surface soil which has since been removed as a result of removal actions will not be examined in the Site-Wide Ecological Risk Assessment. However, concentrations of residual contaminants will be examined. This approach will provide a more appropriate assessment of ecological risks associated with current levels of soil contamination.

In summary, the results of the meeting held on February 15, 1994 determined that the SLERA would not need to be revised and additional field work was not required to prepare the Site-Wide Ecological Risk Assessment. It was agreed that the Site-Wide Ecological Risk Assessment will state that contaminants found in excess of benchmark values represent a potential risk to ecological receptors. Additionally, it is acknowledged that potential source areas of contaminants and the mechanisms that may be responsible for transporting contaminants from source areas to areas inhabited by ecological receptors are being discussed and reported as part of the overall RI/FS being conducted at the FEMP. As part of this process, the Feasibility Study for Operable Unit 5 will evaluate several remedial alternatives for each environmental media, including each alternative's effectiveness in protecting ecological receptors.