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**7838**

**U-005-504.7**

**SUBMITTAL OF OU 3 FINAL RECORD OF DECISION**

**09/24/96**

**USEPA  
8  
LETTER**

**DOE-FN**



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

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FILE: 6446.466  
REPLY TO THE ATTENTION OF:

SEP 24 1996

Mr. Johnny W. Reising  
United States Department of Energy  
Feed Materials Production Center  
P.O. Box 398705  
Cincinnati, Ohio 45239-8705

SRF-5J

RE: Submittal of OU 3  
Final Record of  
Decision

Dear Mr. Reising:

This letter serves notification that the Director of the Superfund Division of the United States Environmental Protection Agency (U.S. EPA), Region V has signed the Record of Decision (ROD) for Operable Unit 3 at the United States Department of Energy's Feed Materials Production Center.

U.S. EPA has also reviewed the September 20, 1996, letter requesting the deletion of 10 CFR 61 as a relevant and appropriate requirement, as this was inadvertently placed in the ROD. U.S. EPA concurs with this request.

Enclosed is the signed declaration statement along with pages marking typographical errors requiring change.

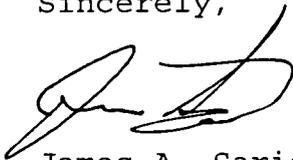
Please submit five (5) copies of the ROD with the signed declaration page to U.S. EPA within Fourteen (14) days receipt of this letter.

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action  
response  
to doc-1249-9/6  
(9992)

-2-

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

Sincerely,



James A. Saric  
Remedial Project Manager  
Federal Facilities Section  
SFD Remedial Response Branch #2

Enclosure

cc: Tom Schneider, OEPA-SWDO  
Jack Baublitz, U.S. DOE-HDQ  
John Bradburne, FERMCO  
Charles Little, FERMCO  
Terry Hagen, FERMCO  
Tom Walsh, FERMCO

In addition to the selected remedy, this ROD also:

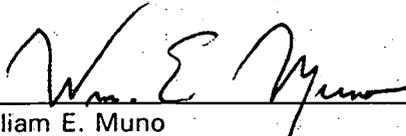
- Incorporates the decisions provided in the IROD so as to provide for an integrated implementation of the respective decisions;
- Adopts the procedures and disposition decisions of Removal Action 9 to continue disposition of the products, residues, and nuclear materials generated during site operations; and
- Adopts prior decisions made for management of Safe Shutdown (Removal Action 12), management of asbestos abatement (Removal Action 26), and management of debris (Removal Action 17).

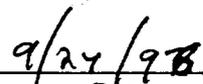
#### STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate (ARAR) to the remedial action (or justifies a CERCLA waiver), and is cost effective. A waiver by the United States Environmental Protection Agency (U.S. EPA) is required for State of Ohio solid waste disposal requirements to allow waste disposal over a high-yield sole-source aquifer. A waiver is granted pursuant to CERCLA 121(d)(4)(D) that allows a waiver of an ARAR if "the remedial action selected will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, criteria, or limitation, through the use of another method or approach." The justification for this waiver is provided in this ROD and is supported by the administrative record for OU3. By signing this ROD, the U.S. EPA grants the waiver required to implement the on-site disposal element of the OU3 final remedial action.

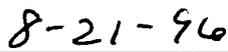
The OU3 selected remedy uses permanent solutions and alternative treatment technologies to the maximum extent practicable. The selected remedy, coupled with the OU3 IROD and on-going programmatic removal actions, fully addresses the remediation of OU3 and satisfies the statutory preference for remedies that employ treatment that reduces contaminant toxicity, mobility, or volume as a principal element.

Because this remedy will result in contaminants remaining on-site in an engineered disposal facility, a review will be conducted no less than five years after commencement of the remedial actions to ensure that the remedy continues to provide adequate protection of human health and the environment. The results of each five-year evaluation will be provided to the U.S. EPA and the public for review and comment.

  
 \_\_\_\_\_  
 William E. Muno  
 Director, Superfund Division  
 U.S. Environmental Protection Agency, Region V

  
 \_\_\_\_\_  
 Date

*for*   
 \_\_\_\_\_  
 J. Phil Hamric  
 Manager, Ohio Field Office  
 U.S. Department of Energy

  
 \_\_\_\_\_  
 Date

## DECLARATION STATEMENT

### SITE NAME AND LOCATION

Fernald Environmental Management Project (FEMP) Site, formerly known as the Feed Materials Production Center -- Operable Unit 3 (OU3), Fernald, Hamilton County, Ohio

### STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected final remedial action for OU3 at the U.S. Department of Energy FEMP Site in Fernald, Ohio. OU3, which is one of five operable units at the FEMP, consists of the former Production Area and production-associated buildings and equipment, including all above-, at-, and below-grade improvements, containerized materials, storage pads, roads, railroad tracks, above- and below-ground tanks, and utilities. This remedial action was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (hereinafter jointly referred to as "CERCLA"), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

The decision presented herein is based on the information available in the administrative record for OU3 and maintained in accordance with CERCLA. The major documents prepared through the CERCLA process include the OU3 Remedial Investigation/Feasibility Study (RI/FS) Work Plan Addendum, the OU3 Record of Decision for Interim Remedial Action (IROD), the OU3 RI/FS Report, and the Proposed Plan for the OU3 Final Remedial Action. This decision is also based on comments received subsequent to the public hearing held on April 23, 1996, at The Plantation, in Harrison, Ohio, following issuance of the OU3 RI/FS Report and Proposed Plan. All comments received during the public comment period on the Proposed Plan were reviewed and considered in the development of this ROD. Based on these comments, the public generally accepts the proposed remedy. The State of Ohio concurs with the selected remedy and the applicable or relevant and appropriate requirements (ARARs) put forth in this ROD for OU3.

### ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from OU3, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

### DESCRIPTION OF THE SELECTED REMEDY

The selected remedy for OU3 is "Selected Material Treatment, On-Property Disposal, and Off-Site Disposition" of material generated by the OU3 interim remedial action and OU3 removal actions. The OU3 selected remedy:

- Provides for unrestricted/restricted release of materials, as economically feasible, for recycling, reuse, or disposal;
- Permits treatment of materials to meet the on-site disposal facility (OSDF) and/or off-site disposal facility waste acceptance criteria (WAC);
- Requires off-site disposal of process residues, product materials, and process-related metals;
- Requires off-site disposition of acid brick and concrete from specific locations and any other materials exceeding the OSDF WAC;
- Permits disposal of remaining OU3 wastes in the OSDF;
- Imposes administrative controls through deed restrictions and access controls; and
- Incorporates post-remediation activities that includes long-term monitoring and maintenance of the OSDF and operation of a groundwater monitoring network to evaluate the performance of the OSDF.

in New Baltimore farther to the southeast. No sensitive sub-populations occur within one mile of the FEMP except for 29 children who live in the area. Six schools that enroll approximately 3,300 students, two daycare centers that enroll an estimated 160 children, and residences that house approximately 8,100 children are within five miles of the FEMP. Recreational facilities are centered in the Miami Whitewater Forest to the south. Two youth camps operated in the area, but were recently closed.

Commercial activity is generally greatest in the village of Ross, approximately three miles to the northeast. Industrial use concentrations near the FEMP include a small industrial park to the south along S.R. 128, industries located in the village of Fernald, and industries located along the site's western boundary.

## 1.2 History of Site

In January 1951, the New York Operations Office of the Atomic Energy Commission selected a 1,050 acre site near Fernald, Ohio to construct a facility to produce uranium products. Construction operations were initiated in May 1951. The facility was designated the Feed Materials Production Center prior to initiation of on-property pilot operations in October 1951. Production operations began in 1952 and continued until July 1989, at which time operations were placed on standby to focus on environmental compliance and waste management initiatives. Following appropriate congressional authorizations, the facility was formally closed in June 1991. To reflect a new site mission focused on environmental restoration, the name of the facility was changed to the FEMP in August 1991.

In 1985, the United States Environmental Protection Agency (U.S. EPA) issued a Notice of Noncompliance to DOE, identifying its concerns over potential environmental impacts associated with the FEMP's production activities, which included the release of uranium and other substances to the air, surface soil, and water. In addition, large quantities of low-level radioactive waste and hazardous wastes were (and continue to be) in storage at the site. Conferences were subsequently held between DOE and U.S. EPA to discuss the conditions at the FEMP and to identify the steps proposed by DOE to achieve and maintain compliance with environmental regulations and standards. These steps are documented in a Federal Facilities Compliance Agreement (FFCA), signed by DOE and U.S. EPA on July 18, 1986. Pursuant to the FFCA, a site-wide remedial investigation and feasibility study (RI/FS) was initiated in July 1986 pursuant to the Comprehensive ~~Emergency~~ Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (hereinafter jointly referred to as CERCLA). → ENVIRONMENTAL

In 1988, DOE entered into a Consent Decree with the Ohio Environmental Protection Agency (Ohio EPA) that provided for the management of water pollution and hazardous wastes. This decree was amended in 1993 by the Stipulated Amendment to the Consent Decree (Ohio 1993).

A series of technical discussions was held with the U.S. EPA and the Ohio EPA, which led to the development of an RI/FS Work Plan (DOE 1988). This document identified 27 units of the FEMP to be investigated during the RI/FS. Several modifications eventually increased the total to 39 units. In the course of the investigation, it became apparent that, for technical and program management purposes, these 39 units needed to be categorized and grouped accordingly. The FEMP was subsequently divided into five operable units to promote a more structured and expedient cleanup. The final RI/FS Work Plan was approved in May 1988.

In November 1989, the FEMP was placed on the National Priorities List (NPL), a list of sites identified by the U.S. EPA for possible long-term remedial action under CERCLA. The NPL

and GD202.102) <sup>of</sup> that identify conditions that would be acceptable to allow an exemption to the siting criteria. While these policies state that several factors will be considered in evaluation <sup>that</sup> an exemption, the specific factors identified indicate ~~that~~ the protection of human health and the environment should be provided solely by the existing hydrogeologic conditions. This has been reaffirmed by the Ohio EPA in several meetings. ✓

The primary hydrogeologic standards established by these policies are:

- Significant thickness of low-permeable material between the disposal facility and the aquifer;
- Lack of inter-connection between the sole-source aquifer and any significant zones of saturation;
- Significant amount of sediment [soil] between the disposal facility and the high-yield aquifer to prevent leachate from migrating to the high-yield aquifer during the life of the landfill and the post-closure care period. The post-closure care period for a solid waste is a minimum of 30 years [OAC 3745-17-14(A)].

It has been determined, based on existing hydrogeologic information, that the existing hydrogeologic conditions at the FEMP do not fully meet these conditions. This is based on the possibility that some granular soil are interbedded in the till and the need to protect the aquifer for significantly longer than 30 years (at least 200 years; an ARAR under 40 CFR 192).

Because the aquifer underlies the entire site, a waiver was requested to locate the OSDF on the FEMP. The waiver request was based on the ability of the selected remedial action, through the use of another method or approach, to attain a standard of performance that is equivalent to that required by the ARARs. The criteria used to determine ARAR equivalency per 40 CFR 300.430(f)(1)(ii)(C)(4) include degree of protection, level of performance, reliability into the future, and time required for results.

9.2.2. Equivalent Standard of Performance

The preamble in the NCP to 40 CFR 300.430(f)(1)(ii)(C)(4) states that <sup>Such a waiver</sup> ~~the purpose of an~~ ARAR waiver is for the use of alternative but equivalent technologies and comparison based <sup>when</sup> on risk is only permitted where the original standard is risk-based. The Ohio exemption guidance, with its focus on geological conditions, is for the most part analogous to a technology standard but also appears to be, with respect to level of performance, risk- and technology-based. Therefore, the following analysis of CERCLA waiver criteria uses a technology-based comparison, except for level of performance, which is a risk-based comparison. The circumstances of the selected remedy are considered equivalent to the Ohio EPA requirements and thereby warrant the granting of a CERCLA ARAR waiver. The basis for equivalency is identified below for each of the identified criteria. ✓

Degree of protection:

- **Ohio EPA Standard** - The justification to allow a solid waste landfill over a high-yield sole-source aquifer is that the existing hydrogeology will provide adequate protection to the high-yield sole-source aquifer from the effects of a release of leachate and thereby protect the aquifer from contamination. The approach spelled out by the pertinent policies is to prevent leachate from reaching the aquifer during the active life of the landfill and the post closure period of 30 years. The active life of the OSDF for OU3 wastes is estimated to be seven years

- **Ohio EPA Standard** - Significant amount of sediment [soil] between the disposal facility and the high-yield aquifer to prevent leachate from migrating to the high-yield aquifer during the life of the landfill and the post-closure care period. The post-closure care period for a solid waste landfill is a minimum of 30 years [OAC 3745-27-14(A)].
- **Equivalent Standard** - At a minimum, a total of four additional layers will be added to the standard solid waste cap and liner [OAC 3745-27-08(C)]. These layers are a sand filter, biotic barrier, and bentonite geocomposite layers in the cap to reduce infiltration and to protect the integrity of the cap. A leak-detection layer will be provided in the liner to monitor the integrity of the containment system and to provide early warning to allow corrective action prior to any adverse impact to the aquifer. These additional engineering controls together with the natural hydrogeology will prevent leachate from reaching the aquifer during the post-closure care period.

Level of performance (risk-based):

- **Ohio EPA Standard** - Ohio Revised Code (ORC) 3734.02(G) allows exemptions of Ohio EPA regulations if a remedy is unlikely to adversely affect the public health or safety or the environment. The pertinent policies mirror this requirement using an approach which requires existing hydrogeologic conditions to provide this protection. Ohio EPA does not propose a specific definition for the protection of human health and the environment. However, OAC 3745-27-10(F)(7)(a)-(d), which specifies solid waste landfill operating requirements, sets forth concentration levels for constituents detected in the groundwater for which a corrective action is required. This standard provides an appropriate framework for risk analysis in this case because the waiver concerns the establishment of a solid waste disposal unit. These levels are concentrations that are at a statistically significant level to be protective of human health and the environment, and the promulgated MCL, or background concentrations for constituents that do not have a promulgated MCL, or alternative groundwater protection standard (for a known or suspected carcinogen, concentration levels that represent a cumulative excess upper-bound lifetime cancer risk to an individual within the  $1 \times 10^{-4}$  to  $1 \times 10^{-6}$  range).
- **Equivalent Standard** - This same definition has been used as a threshold criteria in evaluating alternatives in the CERCLA decision-making process at the FEMP and specifically in the OU5 FS with the addition that constituents in groundwater should not be higher than the proposed MCLs. The selected remedy meets this threshold criteria. Protection of human health has been determined through the risk assessment process based on contaminant transport modeling and the NCP acceptable incremental lifetime cancer risk range of  $1 \times 10^{-4}$  to  $1 \times 10^{-6}$  and in compliance with promulgated and proposed MCLs.

Reliability into the future:

The combination of hydrogeologic and engineering controls (including additional controls beyond the requirements for a solid waste disposal facility) provides increased reliability into the future because of the following:

- The biotic barrier in the cap will prevent burrowing animals or vegetative roots from compromising the integrity of the cap and thereby increasing the infiltration.

designs and advancement of the state-of-the-art technologies can and will be incorporated into planning. The first several D&D actions in OU3 are good examples of this principle in action. The Plant 1 D&D Large Scale Technology Demonstration is also a good example. DOE is investing in direct improvements to the technologies needed for OU3 D&D through the demonstration project. Several currently proposed technology demonstrations are designed to improve worker safety, reduce the amount of contamination on materials that could go to the OSDF, and improve characterization of the structure. DOE is also investing in D&D at other DOE sites. There will potentially be results from those demonstrations, as well, that will may apply to D&D at Fernald. DOE is thoroughly committed to the review and improve philosophy that is presented by the commentors and will continue to invest in technology advancement to benefit its remediation projects. Specific approaches to assuring incorporation of best practices will be detailed in the OU3 integrated RD/RA work plan. or ✓

### **SPECIFIC COMMENTS #2g**

#### Lisa Crawford; Written Comments

*"DOE should commit to being open to considering new technologies that will reduce volume, toxicity, and mobility of wastes being disposed of on-site. I believe that DOE should remain open to new technologies which could render the on-site waste safer."*

#### Vicky Dastillung; Written Comments

*"The 5 year reviews of the ROD for effectiveness should include an analysis of the then current technologies' ability to pursue further remediation. If at a future time a technology would allow for a way to truly deactivate the radioactivity or hazardous chemicals or for a way to greatly enhance the long-term storage of the material, we would want to be able to evaluate if it was desirable to pursue further action. This process would also call attention to the technology research needs of the DOE."*

#### Pamela Dunn; Written Comments

*"Continued efforts in technology development should proceed in an attempt to discover more effective methods for treatment and disposal of the waste streams designated for the disposal cell. Efforts should continue to develop technology that may one day have the ability to remove additional contamination from the soils without total destruction of the existing eco-system present on the site."*

#### Ohio EPA; Written Comments

*"DOE should commit to being open to consider new technologies which may reduce the volume, toxicity, or mobility of wastes being disposed of on-site. Ohio EPA is simply requesting the DOE remain open to the idea of additional technologies which may result in a safer waste form for on-site disposal."*

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### **SUMMARY COMMENT #2h - Environmental Monitoring**

Several members of the public and the Ohio EPA requested that DOE commit to real-time monitoring for discharges to the environment during remedial action. Ohio EPA requested that