

**FINDING OF NO SIGNIFICANT IMPACT
ENGINEERING EVALUATION/COST ANALYSIS -
ENVIRONMENTAL ASSESSMENT WASTE PIT
AREA STORM WATER RUNOFF CONTROL
FERNALD ENVIRONMENTAL**

DOCUMENT DATE XX-XX-XX

**FINDING OF NO SIGNIFICANT IMPACT
ENGINEERING EVALUATION/COST ANALYSIS - ENVIRONMENTAL ASSESSMENT
WASTE PIT AREA STORM WATER RUNOFF CONTROL
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO**

2724

AGENCY: U. S. Department of Energy

ACTION: Finding of No Significant Impact for the Engineering
Evaluation/Cost Analysis-Environmental Assessment for the Waste
Pit Area, Fernald Environmental Management Project, Fernald, Ohio

SUMMARY: The Department of Energy (DOE) has prepared an Engineering Evaluation/Cost Analysis-Environmental Assessment (EE/CA-EA) for the proposed Storm Water Runoff Control of the Waste Pit Area at the Fernald Environmental Management Project (FEMP), formerly known as the Feed Materials Production Center, located near Fernald, Ohio. The Waste Pit Area is currently used for storing radiological and chemical wastes from FEMP operations. Because storm water runoff from the Waste Pit Area poses a potential threat to human health and the environment, DOE is pursuing a removal action to control the storm water runoff. Removal actions are intended to abate, prevent, minimize, stabilize, mitigate, or eliminate a release or a threat thereof. This action will occur prior to final remediation and will not limit the selection of any final remediation. Based on the analysis in the EE/CA-EA, DOE has determined that this removal action is not a major Federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969. Therefore, preparation of an environmental impact statement (EIS) is not required to incorporate NEPA values into the CERCLA review process and the Department is issuing this

Finding of No Significant Impact (FONSI). Nothing herein is intended to represent a determination of the legal applicability of NEPA to remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

2724

COPIES OF THE EE/CA-EA ARE AVAILABLE FROM:

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(513) 738-6156

FOR FURTHER INFORMATION REGARDING THE NEPA PROCESS CONTACT:

Ms. Carol Borgstrom
Director, Office of NEPA Oversight (EH-25)
U. S. Department of Energy
1000 Independence Avenue, SW
Washington D. C. 20585
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FOR FURTHER INFORMATION REGARDING THE CERCLA PROCESS CONTACT:

Ms. Kathleen Taimi
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BACKGROUND: The FEMP site is located on 1050 acres in a rural area approximately 20 miles northwest of downtown Cincinnati, Ohio. When production was underway, large quantities of liquid and solid waste were generated by various operations. Prior to 1985, solid and slurried wastes from processes were disposed of in the on-site Waste Pit Area. The Waste Pit

Area lies west of the 136-acre production area, which is located near the center of the site.

2724

The Waste Pit Area includes six low-level radioactive waste storage pits, a burn pit, two earthen-bermed concrete silos containing K-65 residues (i.e., high specific activity and low-level radium-bearing residues resulting from the pitchblende refining process), and a concrete silo containing metal oxides. The area also contains a Clearwell, which receives surface water runoff from four of the waste pits.

Contamination from the Waste Pit Area could enter environmental media and migrate off-site through several pathways. Through one pathway, surface water runoff from a portion of the Waste Pit Area enters Paddys Run, a tributary of the Great Miami River. A portion of the flow in Paddys Run enters the regionally important Great Miami Aquifer downstream of the Waste Pit Area as a result of stream bottom leakage. Also, leachate from the Waste Pit Area could potentially migrate into the Great Miami Aquifer. The aquifer underlies the site and serves as the principal source of domestic, municipal, and industrial water throughout the region.

Part of the overall site strategy is to reduce contaminated flow into Paddys Run. Paddys Run is believed to be a source of contamination for the South Plume, which is an area of the Great Miami Aquifer that exhibits elevated levels of uranium within and outside the FEMP boundary. There is also storm water runoff via Paddys Run to the Great Miami River.

PROPOSED ACTION: The proposed action consists of three parts:

2724

- (1) Separating drainage areas within the Waste Pit Area by isolating contaminated and noncontaminated storm water runoff;
- (2) Installing an interim Advanced Wastewater Treatment (IAWWT) System in the short term to remove uranium from other wastewaters discharged from the storm water retention basin to the Great Miami River; and
- (3) Constructing an Advanced Wastewater Treatment (AWWT) Facility within existing Building 51 to be operational in 1994, improving the control of process area storm water runoff, and water recycle and reuse.

This action meets the objective of controlling the storm water runoff with uranium concentrations exceeding the proposed DOE-derived concentrations guides. The Waste Pit Area EE/CA contains detailed descriptions of the proposed action, including maps. An addendum to the EE/CA describes the IAWWT System and the AWWT Facility. A wetlands assessment was incorporated into the EE/CA-EA for this removal action and describes the potential impacts on wetlands and the mitigation measures to be taken. Copies of the EE/CA-EA are available from the Cincinnati address.

The first part of the action, isolating storm water runoff and separating runoff drainage areas, will collect contaminated water from the perimeter of the waste pits and the four concrete storage silos in a new collection sump and pumping station located south of the Clearwell. (The storm water runoff from the surfaces of Pits 1, 2, and 3 will continue to be collected in the Clearwell prior to pumping to the biodenitrification surge lagoon.) Flow

2724

control devices will be installed upstream of drainage channels, located in the Waste Pit Area, to monitor and control peak flows to the new pumping station. The collection sump and pumping station will pump the collected runoff to the biodenitrification surge lagoon, where suspended solids will be allowed to settle prior to treatment through the existing biodenitrification towers. The segregation of drainage areas through the diversion of storm water runoff, as proposed by this action, will be achieved through the modification of existing structures and topography, the plugging of existing culverts and ditches, and the creation of fill areas and earthen berms.

The second part of the proposed action involves installing in the short term an interim Advanced Wastewater Treatment (IAWWT) System, to be trailer-mounted near the storm water retention basin, to remove uranium from other wastewaters discharged from the storm water retention basin to the Great Miami River. The amount (weight) of uranium removed by the IAWWT will exceed the amount added from the implementation of this and other removal actions.

The third part of the proposed action is the construction of an Advanced Wastewater Treatment (AWWT) Facility in Building 51 in 1994, the improved control of process area storm water runoff, and water recycle and reuse. The primary purpose of these improvements is to reduce the radionuclide loading in the effluent from remediation process wastewaters, sanitary sewage treatment, storm water runoff, and from removal actions.

2724

The implementation of this project will utilize only widely practiced and proven technologies. The construction time for the collection and pumping system will be approximately 10 months, and its total capital costs will be \$3,555,000. This project was determined to be cost-effective and the most environmentally sound action among the alternatives considered.

ENVIRONMENTAL EFFECTS: The fundamental objective of the removal action is to protect public health and the environment by controlling the release of storm water runoff with uranium concentrations exceeding the proposed DOE-derived concentrations guides for surface water discharge. Related objectives, founded on other risk-based levels for various potential exposure scenarios, include the protection of biotic environments in Paddys Run and the migration of contaminants from surface water to the underlying aquifer.

The Waste Pit Area Storm Water Runoff Control project will collect approximately 150 pounds of uranium/year. Approximately 10 percent of the uranium will be removed due to settling in the biodenitrification surge lagoon; the remainder will be discharged into the Great Miami River. The IAWWT System will be installed at the storm water retention basin to remove uranium from other waste waters being discharged to the Great Miami River; the amount of uranium that will be removed will exceed the amount added as a result of the implementation of this and other removal actions. The system will be designed to remove a minimum of 320 pounds of uranium/year, which is the incremental mass of uranium that would be added to the existing FEMP wastewater discharge from the first part of this removal action (135 pounds of uranium/year), the Perched Water Removal Action (15 pounds of uranium/year),

2724

and the South Plume Groundwater Removal Action (170 pounds of uranium/year). Treatment of the effluent will generate sludge, suspended solids captured in the treatment filters, and the uranium that will be removed by the ion exchange resin. This sludge will be stored in drums and will be disposed of in accordance with applicable State and Federal regulations.

All possible measures (e.g., good construction planning to ensure the proper phasing of major construction portions of the project, etc.) will be taken to mitigate any adverse impacts to jurisdictional wetlands and other surrounding areas resulting from construction activities during the implementation of the proposed action. Construction of the collection ditches will disrupt some areas delineated as wetlands. DOE performed a wetlands assessment in accordance with 10 CRF 1022. The affected wetland areas total approximately eight acres, and are not considered habitat because they are contaminated. Paddys Run will not be directly affected by construction activities and environmental conditions will gradually improve, as described in the wetlands assessment incorporated into the EE/CA-EA for this removal action.

Any noise or air quality impacts associated with the collection and treatment alternative will be minimal and limited to on-site populations. There will be no permanent changes in land use, no effect on cultural resources, and no discernable effect on property values or other socioeconomic factors. The construction of the channels and sumps will generate waste material, which will be disposed of in accordance with approved site procedures.

2724

There is potential for routine worker exposure to radiation as a result of the implementation of this action. The details of health effects and worker protection are addressed in the Waste Pit Area EE/CA Work Plan.

ALTERNATIVES CONSIDERED: The following alternatives were considered:

o **NO ACTION:** There would be no additional abatement, remediation, or treatment activity in the Waste Pit Area. The selection of this alternative would not change the existing risk to the public and the environment. The no-action alternative serves as a base for comparison with the other alternatives.

o **SURFACE CAPPING:** The second alternative is the construction of a cap over the surface of the Waste Pit Area to minimize contact of rainwater with the contaminated soil. The cap would consist of a synthetic liner covered with a minimum of 12 inches of topsoil. A layer of geotextile would be placed above and below the synthetic liner and a vegetative cover would be provided. Most of the water would be routed away from the waste pit, discharging directly into Paddys Run. A small amount of water could become contaminated via infiltration through the cap.

The implementation of this alternative would cause permanent taking of about 5.5 acres of wetlands near the Waste Pit Area. This taking would be the result of construction activities needed to position the cap. This alternative is environmentally unfavorable because of the permanent taking of

wetlands. The relatively high cost (\$5,556,000) and long construction period²⁷²⁴ are additional disadvantages of this alternative.

o **SURFACE CAPPING WITH LATERAL DRAINAGE SUMP COLLECTION:** The third alternative considered is construction of a surface cap with lateral drainage and a collection sump. Any rainwater infiltrating the cap would be intercepted and diverted to a central collection sump. Then, water would be pumped to the biodenitrification surge lagoon for further treatment. The use of this alternative would prevent rainwater that has infiltrated the cap from contaminating Paddys Run.

The implementation of this alternative would cause permanent taking of about 5.5 acres of wetlands near the Waste Pit Area through construction activities involved in positioning the cap. The permanent taking makes this alternative environmentally unfavorable. The construction of the drainage system creates a potential hazard for workers who may be exposed to the contents of the waste pits. Runoff during construction activities may allow for the release of the waste pit's contents into surrounding areas, including Paddys Run.

Furthermore, any waste disturbed during construction activities would have to be handled and disposed of in an appropriate manner. This increases the risk of worker exposure and elevates the cost of the project. Other limiting factors of this alternative include construction time and project cost (\$7,055,000). The factors discussed above do not make the selection and implementation of this alternative favorable.

o **SOURCE REMOVAL:** This alternative consists of removing all waste and contaminated soil and regrading the site with clean fill. This action would eliminate the threat of contaminated runoff entering Paddys Run. 2724

Approximately 444,500 cubic yards of waste and 58,900 cubic yards of contaminated soil would have to be excavated, packaged, and disposed of at an approved facility. Such a facility does not currently exist at the FEMP, and the time and resources involved with its construction is not within the scope of this project. Significant environmental impacts associated with construction, waste handling, treatment, and final waste disposal resulting from the implementation of this alternative would have to be evaluated further. Other limiting factors, including project time and cost (over one billion dollars), make the selection of this alternative unrealistic.

DETERMINATION: The proposed storm water runoff control system to be implemented at the FEMP's Waste Pit Area will provide drainage flow systems to isolate contaminated from noncontaminated storm water runoff. Runoff will be collected in a new sump and pumped to the biodenitrification surge lagoon, where suspended solids will be allowed to settle out prior to treatment through the existing biodenitrification towers.

The proposed action will have only temporary, construction-related, environmental impacts. It will not result in the permanent taking of wetlands; any cumulative impacts associated with construction will be temporary, allowing the surrounding environment to return to its original condition. The selection of this alternative represents the most environmentally sound action and is cost-effective.

This project does not represent a major Federal action significantly affecting ²⁷²⁴ the quality of the human environment, within the meaning of NEPA. This finding is based on the analyses in the EE/CA-EA (as amended) and in the wetlands assessment. Therefore, the preparation of an EIS for the proposed action is not required. Nothing herein is intended to represent a statement on the legal applicability of NEPA to remedial actions under CERCLA.

Issued in Washington, D.C., this 11th day of December, 1991.



Paul L. Ziemer, Ph. D.
Assistant Secretary
Environment, Safety and Health

2

Memorandum

2724

DATE: JUN 11 1991

REPLY TO
ATTN OF: EM-42 (J. Fiore, 3-8141)

SUBJECT: Feed Materials Production Center Engineering Evaluation/Cost Analysis -
Environmental Assessment for the Waste Pit Area Storm Water Runoff Control
Removal Action

TO: Paul L. Ziemer, EH-1

Attached for your review is the Feed Materials Production Center (FMPC) Engineering Evaluation/Cost Analysis (EE/CA) and a brief addendum for the Waste Pit Area Storm Water Runoff Control Removal Action. In May 1990, the EE/CA was submitted to the U.S. Environmental Protection Agency (EPA), Ohio EPA, and the public for comments. At the same time, comments on the draft version of the EE/CA were provided by the Office of NEPA Oversight (EH-25). The EPA and public comments were answered in a responsiveness summary and incorporated into the August 1990 final EE/CA; the responsiveness summary document is also attached.

The addendum was added to the EE/CA to document a modification made to the preferred alternative subsequent to the publication of the EE/CA. This modification eliminated the need to construct a pilot-scale wastewater treatment plant due to integration with the site-wide program to reduce the total amount of uranium discharged from the FMPC. This addendum serves to update the EE/CA, and together, these documents fulfill the requirements of an Environmental Assessment (EA) under the National Environmental Policy Act of 1969.

I am requesting your review and approval of the attached EE/CA and its addendum as the final EA for the proposed removal action. It is my recommendation, based on the analyses in the EA, that an Environmental Impact Statement is not required for this proposed action. Therefore, a proposed draft Finding of No Significant Impact is attached for your consideration.



Leo P. Duffy
Director
Office of Environmental Restoration
and Waste Management

4 Attachments