FERNALD
Closure Project

8248

DOE and EPA Propose an Amendment to the Cleanup Plan for the Waste Pits Project at the Fernald Closure Project

PUBLIC COMMENT PERIOD – XXX TO XXX, 2003

INTRODUCTION

This Proposed Plan summarizes the Department of Energy's (DOE's) and the U.S. Environmental Protection Agency's (EPA's) recommended changes for several implementation elements of the 1995 Operable Unit 1 Record of Decision (ROD) for the Waste Pits Project at the Fernald Closure Project site in Cincinnati, Ohio. Specifically, the proposed changes provide for the following:

- Aligning the surface and subsurface soil final remediation levels (FRLs) found in the Operable Unit 1 ROD with the approved FRLs for soil in the Operable Unit 5 ROD.
- Placement of Pit 4 soil cover materials meeting on-site waste acceptance criteria into Fernald's On-site Disposal Facility for permanent disposal.

Collectively, these changes provide a level of protectiveness commensurate with the original Operable Unit 1 remedy, while offering significant cost and schedule improvements.

Along with these changes, the plan also provides clarification to terminology used in earlier Operable Unit 1 decision documents, primarily in the definition of liners, caps, and cover systems. Recognizing that the project is 69 percent complete (June 2003 performance data), the clarifications provide clearer definitions for the completion of the project, which is slated for 2005.

This Proposed Plan is intended to be a short summary of DOE and EPA's reasons for advocating changes to the Waste Pits Project cleanup plan. For those members of the public wishing to familiarize themselves with the scope and original implementation elements of the Waste Pits Project, they are encouraged to consult the original ROD, Feasibility Study, and Remedial Investigation for Operable Unit 1. These documents can be reviewed at the Administrative Record repositories listed on page 9.

Public input on the proposed changes and the information that supports the changes is an important contribution to the cleanup plan selection process. Both DOE and EPA encourage the public to review and comment on the proposed changes as presented in this Proposed Plan. Opportunities to comment include a public meeting (see side bar) and a prepaid comment form at the back of this document.

DOE and EPA will make a final decision regarding the proposed changes after all public comments and information submitted during the comment period have been reviewed and considered.

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Public Meeting

xxxxxx, 2003

xx to xx p.m.

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SITE BACKGROUND

The Fernald Closure Project is a 1,050-acre DOE former uranium production facility located approximately 18 miles northwest of Cincinnati. Fernald, Ohio is a small rural community located just south of the site. The government-owned facility operated from 1952 to 1989 providing in excess of 500 million pounds of high-purity uranium metal products in support of U.S. Defense initiatives.

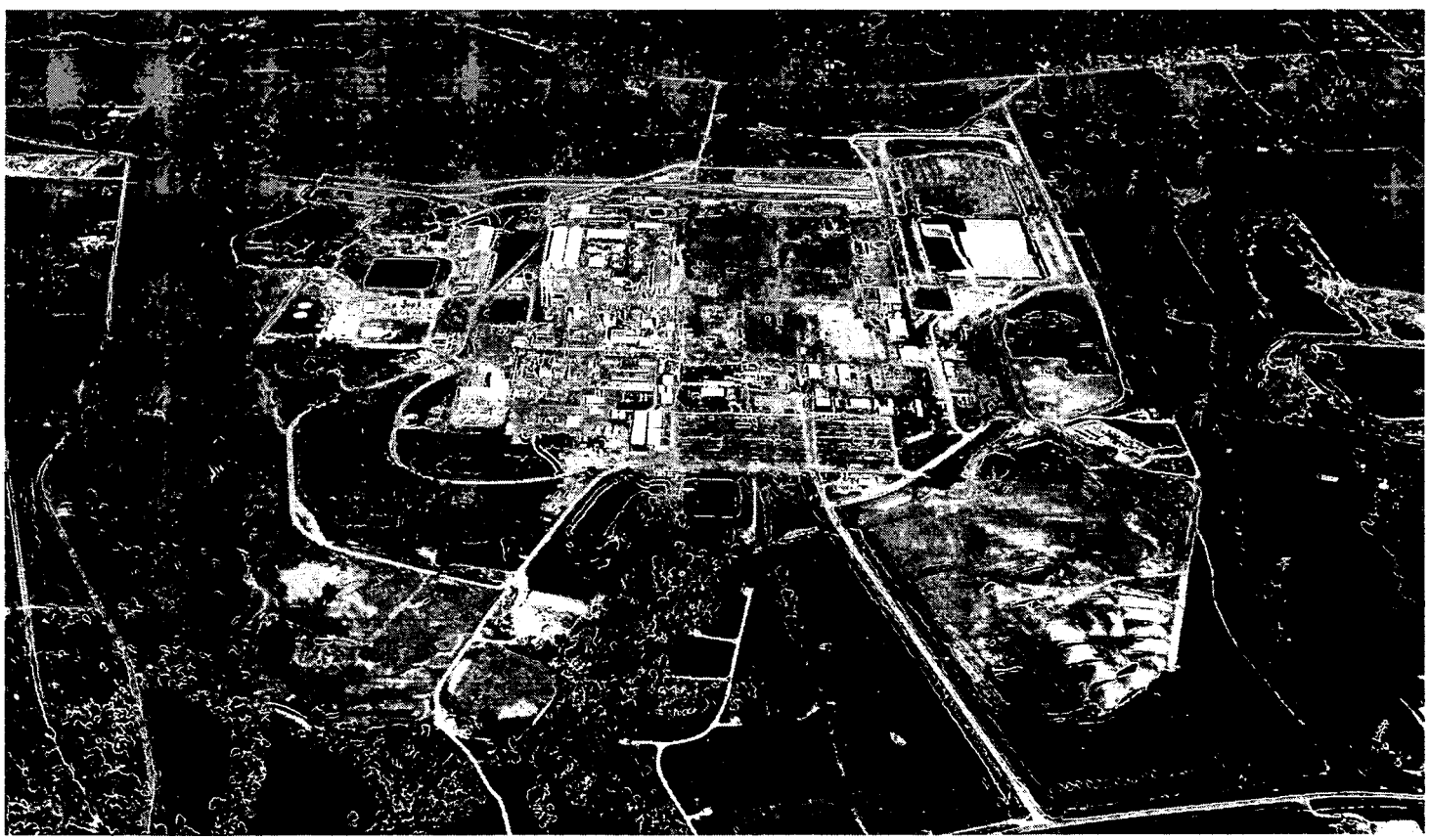
In 1992 the site was renamed the Fernald Environmental Management Project and the mission was formally changed to environmental restoration under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund. Its current name, the Fernald Closure Project, was adopted in 2003 to reflect a continuing emphasis on the completion of restoration activities and achieving the final closure end state safely and efficiently.

To facilitate restoration, the CERCLA work scope for the 1,050-acre facility was divided into five operable units: the Waste Pits (Operable Unit 1); Other Waste Units (Operable Unit 2); the Production Area Facilities and Legacy-Waste Inventories (Operable Unit 3); the K-65 silos (Silos 1&2) and Silo 3 (Operable Unit 4); and Contaminated Environmental Media (Operable Unit 5).

Since 1992, Superfund remedial investigations and feasibility studies have been completed for each of the operable units, and final RODs to establish cleanup levels and document the cleanup plans have been signed for each by DOE and EPA.

As documented in the RODs for the five operable units, the selected remedial actions include: production facility decontamination and dismantlement (D&D); on-site disposal of the majority of contaminated soil and D&D debris; off-site disposal of the contents of the two K-65 silos (Silos 1&2), Silo 3, waste pit material, legacy waste inventories, and limited quantities of soil and D&D debris not meeting on-site waste acceptance criteria; and treatment of contaminated groundwater to restore the affected portions of the Great Miami Aquifer underlying the facility.

Ultimately, the property will be restored to beneficial use as an undeveloped park, with a portion dedicated to the footprint of the On-site Disposal Facility.



CERCLA cleanup actions are well underway at the 1,050-acre Fernald site.

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Overview of the Waste Pits Project and the 1995 Record of Decision Remedy

The Operable Unit 1 Waste Pits Project is a 38-acre area located in the northwest quadrant of the site, and includes six individual waste pits, the Burn Pit, and the Clearwell. Liquid and solid wastes generated by the facility's chemical and metallurgical processing operations were disposed in the waste pits and the Burn Pit. Collectively, the six pits and the Burn Pit contain approximately 1 million *in situ* tons of wastes. The Clearwell was used primarily for stormwater management in the waste pit area, and contains resultant sediments and sludges from runoff control.

The ROD for Operable Unit 1 was officially signed by DOE and EPA on March 1, 1995. The major components of the selected remedy are:

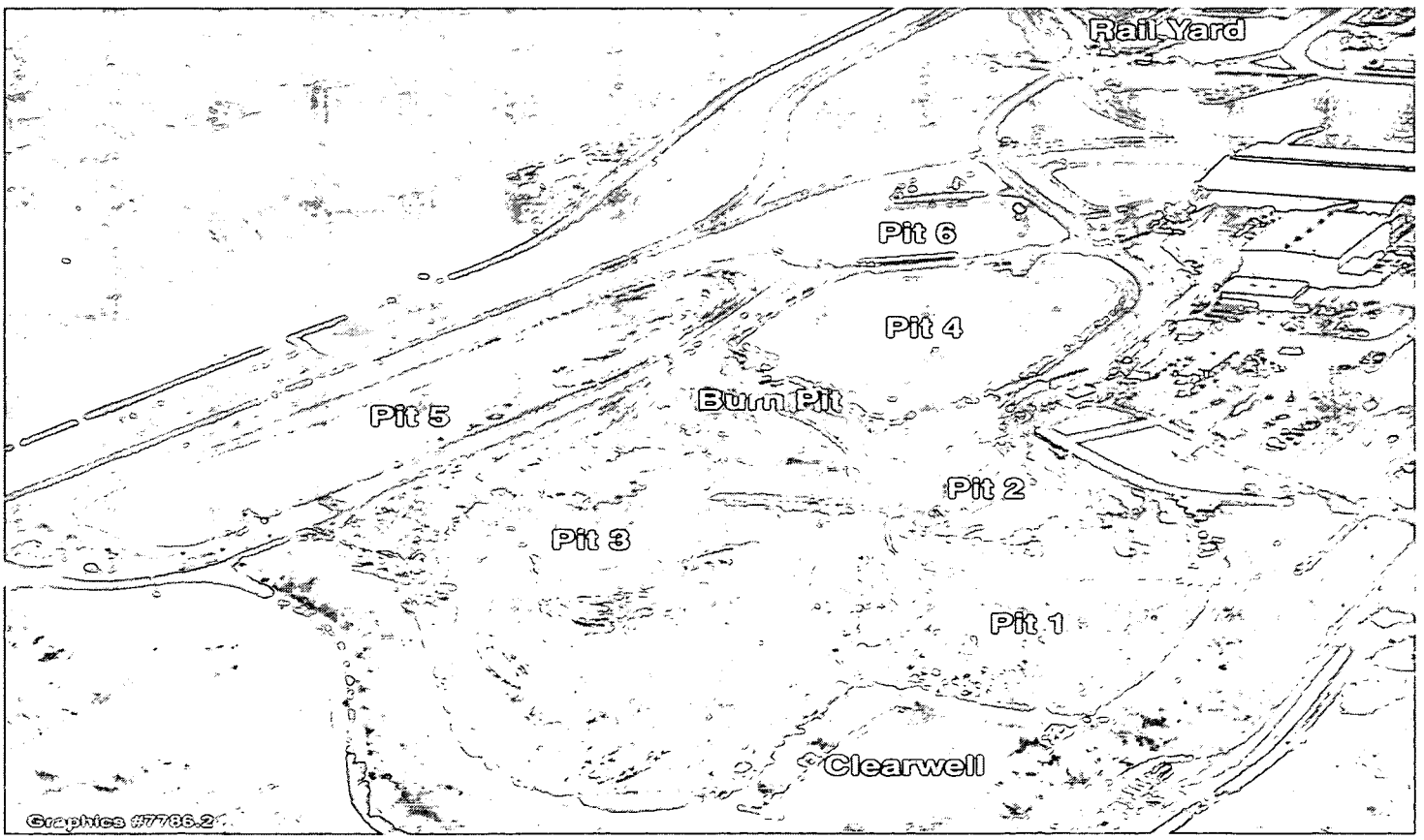
1) Construction of waste processing and loading facilities and equipment;
2) Removal of waste pit contents, caps, and liners, and excavation of underlying contaminated soil;
3) Treatment of the waste as required to meet the waste acceptance criteria of an off-site disposal facility;
4) Shipment of waste via rail for off-site disposal;
5) Decommissioning and removal of the treatment units and associated facilities within the operable unit.
6) Disposal of remaining Operable Unit 1 residual contaminated soil as documented in the Operable Unit 5 ROD.

The proposed changes affect the components in Item 2 and 6 listed above, and the remaining components remain unaffected.

A contract for the design, construction, and operation of the processing facilities necessary to treat the pit wastes and load into railcars for disposal was awarded to Shaw Corporation (formerly IT Corporation) in October 1997. Envirocare of Utah was selected as the off-site disposal facility in September of 1996.

Initiation of operations began on February 22, 1999, with the processing of waste soils destined for off-site disposal by Operable Unit 1. Excavation and processing of pit waste began in September 1999.

Through June 2003, the project has processed and shipped more than 560,000 tons of waste material via 87 unit trains to the Envirocare facility. Wastes have been excavated and processed from pits 1 through 5, and will proceed through the remaining pits in calendar years 2003 and 2004.



Shipping and off-site disposal operations for the Waste Pits Project are 69% complete, and project closeout planning is underway.

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DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGES

Two changes for the Waste Pits Project are documented in this plan:

1. Aligning the surface and subsurface soil FRLs from the Operable Unit 1 ROD with the approved soil FRLs found in the Operable Unit 5 ROD.
2. Placement of Pit 4 soil cover material meeting on-site waste acceptance criteria into the On-Site Disposal Facility for permanent disposal.

Change No. 1 – Adjustment of Soil Remediation Levels

Back in the early 1990s ~~– for funding assurance reasons –~~ soil cleanup levels were established individually for the source control operable units (Operable Units 1, 2, and 4) along with the site-wide environmental media unit (Operable Unit 5). While this created ~~a~~ redundancy, it helped assure that each of the source control units was allowed to address all aspects of cleanup within the operable unit boundary, independent of the site-wide cleanup activities under Operable Unit 5. This step allowed the various operable units to individually develop cleanup plans even though the various RODs trailed one another by a year or more. ~~had the breadth of scope and attendant funding necessary to address all aspects of cleanup within the operable unit boundary, independent of the site-wide cleanup activities under Operable Unit 5. This step accommodated a time when funding levels were less certain than they are today, and the progressive ROD remedy decisions were trailing one another by a year or more.~~

As part of this approach, the decision documents for each of the source control operable units acknowledged that final soil cleanup levels established through Operable Unit 5 would be reexamined for applicability to the source control units once the Operable Unit 5 process was complete. For Operable Unit 1, the following statement was placed in the 1995 ROD to accommodate this approach: "The Operable Unit 1 remediation levels in this Record of Decision will be reexamined by the Operable Unit 5 Feasibility Study and ROD, based upon available Operable Unit 5 Feasibility Study conclusions, recommendations from the Fernald Citizen's Advisory Task Force, and public comment". Later, the Operable Unit 5 ROD brought closure to this process by including the following requirement: "Where the final soil remediation level for a specific constituent established through the Operable Unit 5 decision process is more restrictive (i.e., lower) than that defined in an individual ROD for Operable Units 1, 2, or 4, the final Operable Unit 5 remediation level will serve as the soil cleanup criteria within the boundary of the source operable unit."

Soil Cleanup Level Comparisons

In 2003, major portions of the Waste Pits Project are nearing completion of waste excavation and processing activities. As such, it is appropriate that the project address the realignment of the soil cleanup levels since the focus will soon turn to final soil remediation within the project boundary. Once pit wastes and contaminated liners are removed, surface and subsurface soils will be remediated to the extent necessary to provide long-term protection of the underlying Great Miami Aquifer and to achieve the intended "undeveloped park" future land use adopted by Operable Unit 5.

Consistent with this remediation objective, a review was performed to compare the Operable Unit 1 surface and subsurface soil cleanup levels with the corresponding soil cleanup levels from Operable Unit 5. The review showed that the Operable Unit 5 soil cleanup levels are lower than those adopted for Operable Unit 1 for all constituents and all cases, with the exception of one constituent: technetium-99 in subsurface soil. As shown in Table 1, ~~illustrates the results of the comparison, and shows that~~ the final level selected for technetium-99 as a site-wide level in Operable Unit 5 (30 pCi/g) is higher than the pit-specific subsurface levels calculated ~~selected~~ for Operable Unit 1 (0.26 to 9.9 pCi/g).

Table 1
Technetium-99 Soil Cleanup Level Comparison

Operable Unit 1 Subsurface Cleanup Levels (pCi/g)	
Pit 1	Not Present as a Constituent of Concern
Pit 2	5.5
Pit 3	0.75
Pit 4	0.26
Pit 5	1.4
Pit 6	7.3
Burn Pit	14
Clearwell	9.9
Operable Unit 5 Cleanup Level (pCi/g)	
On-Property Final Remediation Level for the Undeveloped Park Land Use	30

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During the Operable Unit 1 and 5 ROD development process, it was acknowledged that a formal public review process (i.e., a ROD Amendment) would be utilized if future realignments resulted in the *raising* of any Operable Unit 1 soil cleanup levels to match higher Operable Unit 5 values. As directed through the earlier ROD agreements, all lower Operable Unit 5 levels must be utilized to guide soil cleanup in the Operable Unit 1 area, and no decision-document changes are necessary to automatically move to these lower levels for the constituents affected.

The realignment to the higher Operable Unit 5 technetium-99 level, however, needs to be accomplished through the ROD Amendment discussed in this Proposed Plan.

The original 1995 Operable Unit 1 technetium-99 subsurface soil cleanup levels were developed via a screening-level environmental model. In the screening approach, it was conservatively assumed that groundwater contaminant concentrations – derived from the leaching of residual soil contamination – would need to achieve the lower-bound 10^{-6} incremental lifetime cancer risk (ILCR) target within the acceptable 10^{-4} to 10^{-6} range adopted by the Superfund program. The lower-bound 10^{-6} groundwater risk target was conservatively utilized to guide the setting of Operable Unit 1 soil cleanup levels because the Operable Unit 5 process had not yet established approved site-wide groundwater cleanup risk targets and corresponding cleanup levels. At that point in time, Operable Unit 5 trailed Operable Unit 1 by about 18 months in the decision-making schedule.

Similarly, individual pit-specific technetium-99 cleanup levels were then set from the screening model under the conservative assumption that the entire thickness of pit wastes (which vary from pit to pit) would be available to leach into the aquifer over the long term. In other words, it was assumed for modeling purposes that the pit wastes would hypothetically remain in place as a continuing source term at their present day pit thickness.

These conservative assumptions and decisions were carried forward for inclusion in the Operable Unit 1 ROD, pending the outcome of the Operable Unit 5 site-wide decision-making process.

As part of the Operable Unit 5 decision-making, site-wide groundwater risk targets were subsequently set based on Federal Safe Drinking Water Act MCLs, or a 10^{-5} risk target in the absence of MCLs. This is in contrast to the more conservative 10^{-6} value adopted in Operable Unit 1. The 10^{-5} risk target is within the U.S. EPA's target risk range of 10^{-4} to 10^{-6} and therefore is an acceptable risk level. Using the MCL/10^{-5} groundwater target, the Operable Unit 5 cross-media soil cleanup levels were developed using a comprehensive model that included a detailed, realistic consideration of the residual quantity of material available to leach to the aquifer at any given location over the long term. For the Waste Pits Project, the Operable Unit 5 model realistically assumes that the pit contents are removed and are therefore not a continuing leachable source that needs to be represented in the model.

All of the Operable Unit 5 cross-media modeling parameters and inputs were developed in concert with EPA under a decision-making process that occurred approximately 18 months after the signing of the Operable Unit 1 ROD.

Based on the detailed modeling analyses conducted to evaluate technetium-99 mobility and residual leaching potential, the Operable Unit 5 soil cleanup level was found to be protective of the Great Miami Aquifer at the approved MCL/10^{-5} risk target for all residual contaminant conditions evaluated. Therefore, in consideration of this finding, it is appropriate that it be adopted to guide final soil cleanup in the Operable Unit 1 footprint once the pit wastes are fully removed such that they can no longer serve as a continuing source term.

Table 2 summarizes the principal differences in assumptions or approach between the earlier screening-level environmental modeling conducted for Operable Unit 1 and the more comprehensive fate and transport modeling conducted for assessing cross-media impacts under Operable Unit 5.

~~This Proposed Plan is the necessary first step to the ROD Amendment, and provides the mechanism for receiving and incorporating public input on the proposed realignment.~~

Readers note: *The technetium-99 adjustment proposed in this plan completes the process to achieve site-wide alignment with the ~~site-wide~~ Operable Unit 5 soil cleanup levels. For the other two source operable units with unit-specific soil levels (Operable Units 2 and 4), the levels have already been lowered as~~where~~ necessary to align with Operable Unit 5 levels (as required automatically by the Operable Unit 5 ROD). ~~, or else will be achieved directly through the site-wide soil remediation efforts underway. Therefore~~, ~~n~~No further upward alignment adjustments are considered necessary for any of the source operable units beyond the changes proposed for Operable Unit 1 in this plan, ~~Proposed Plan~~ and no future ROD Amendments to raise soil cleanup levels in the other source operable units are anticipated.*

Change No. 2 – On-Site Disposal of Pit 4 Cap Materials

This second proposed change permits the on-site disposal of a portion of the Pit 4 soil cap material in the On-site Disposal Facility, rather than shipping the soil off site for disposal as stated in the 1995 Operable Unit 1 ROD. Specifically, this change would allow the disposal of approximately 8,155 cubic yards (out of an estimated total of 14,600 cubic yards in the Pit 4 cap) of soil materials used to construct the surface layers of the cap. These soils have been shown to:

- Meet the waste acceptance criteria for the On-site Disposal Facility, as demonstrated through a comprehensive sampling and analysis program performed under the February 24, 2002 Project Specific Plan for the Waste Pits Remedial Action Project Investigation of Waste Pit 4 Cap Material. The results were then documented in the August 15, 2002 Waste Pit 4 Cap Excavation Implementation Plan.
- No longer be needed as blending stock to meet DOT shipping and/or Envirocare waste acceptance requirements, or as construction materials for roads and embankments within the Waste Pit project area.

While this change has no impact on the overall protectiveness of the Operable Unit 1 remedy, it does represent a significant cost saving to the government. Savings in processing, shipping, and disposal costs of approximately $4.52 million will be realized through this change.

Table 2
Comparison of Modeling Approach and Assumptions Used to Develop the Operable Unit 1 and 5 Technetium-99 Soil Cross-Media Cleanup Levels

Approach/Assumption	Operable Unit 1	Operable Unit 5
Modeling Approach	"Screening level" spreadsheet model	Comprehensive Fate and Transport model used to develop the health-protective Operable Unit 5 cross-media soil cleanup levels
Range of Applicability	The screening-level modeling needed to address the full range of Operable Unit 1 remedial alternatives that were under consideration in the Feasibility Study prior to the ROD. The alternatives under consideration included capping the pit wastes in place, as well as full removal of the wastes for off-site disposal.	Able to incorporate the actual ROD-based remedy decisions reached for Operable Units 1, 2, 3 and 4. For Operable Unit 1, the final decision – full waste pit removal and off-site disposal – was incorporated into the model to set the subsequent health protective cross-media soil cleanup levels.
Target Great Miami Aquifer Risk Level Used In Decision-making	10^{-6} Incremental Lifetime Cancer Risk (ILCR) level. The 10^{-6} risk level was used pending the final risk target selected for Operable Unit 5.	The final selected risk targets for Operable Unit 5 were the Federal Safe Drinking Water Act MCLs for each constituent of concern, or 10^{-5} ILCR in the absence of MCLs. (For technetium-99, the 10^{-5} ILCR target was used.)
How Waste-Pit Material Source Term Was Accounted For in the Model	Represented as a continuing source based on full pit waste thicknesses in place (needed to encompass the capping alternatives during the Feasibility Study). This resulted in the need to establish pit-specific cleanup levels, since each pit has a different geometry and waste thickness. Pit 1 did not have technetium-99 present as a constituent of concern, so a pit-specific value was not required.	The modeling specifically acknowledged that the full thickness of waste-pit materials would be removed per the final Operable Unit 1 ROD. The only remaining source would be the underlying residual soils, which were accounted for as a finite source in the Operable Unit 5 cross-media impact model.
Fate and Transport Parameters used in the Model	Literature values in the absence of site-specific data under development by Operable Unit 5.	Site-specific geochemical data developed directly through the Operable Unit 5 Remedial Investigation.

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The Pit 4 cap was constructed in 1988 and 1989 from soil materials obtained from various locations on-site. The cap was constructed in three layers, with each layer constructed of materials obtained from different on-site locations. The upper two layers of the cap, representing the top 3 to 3.5 feet of material, were identified for potential placement in the On-site Disposal Facility based on the following:

- These materials originated from areas of the site having little impact from plant operations, and therefore a high potential for meeting the On-site Disposal Facility waste acceptance criteria. Specifically, the soil materials used to construct the surface layers originated from the excavation of the east stormwater retention basin and from an undisturbed area located north of Pit 5.
- Historical analytical data from earlier sampling events in the Pit 4 cap confirmed low contaminant concentration levels within the surface layers (i.e., below the acceptance criteria limits for the On-site Disposal Facility).
- Sufficient blend and construction materials from other Waste Pit Project sources were determined to be available to meet future project needs.

To confirm that the targeted cap materials meet the On-site Disposal Facility waste acceptance criteria, a comprehensive sampling and excavation plan was developed and executed consistent with the requirements defined in the site's approved Site-wide Excavation Plan and On-site Disposal Facility Waste Acceptance Criteria Attainment Plan. The sampling process employed a combination of soil borings and real-time scanning technology to develop a three dimensional profile of contaminant concentrations within the Pit 4 cap. The results of this sampling process were documented in the August 15, 2002 Waste Pit 4 Cap Excavation Implementation Plan. -This Plan also ~~information was then used to develop~~ documented an excavation approach that targeted only those materials that meet the On-site Disposal Facility waste acceptance criteria. This included maintaining a safety margin during the excavation process between the above- and below-waste- acceptance-criteria materials to ensure that only waste-acceptance-criteria compliant materials would be removed for disposal in the On-site Disposal Facility.

As stated previously, the resultant volume of waste-acceptance-criteria compliant material removed from the Pit 4 cap was approximately 8,155 cubic yards. This material is currently stockpiled and segregated awaiting a final determination on ~~approval of~~ this proposed change. The remaining volume of cap material left for off-site disposal and potential blending stock (if needed) is approximately 6,445 cubic yards.

Since initiation of operations, various planning or implementation constraints originally on the project have been modified, thereby making this proposed change possible. Three modifications in particular provide necessary relief with respect to blending requirements:

- DOE was granted an exemption by the Department of Transportation to ship material with a higher radiological content in closed top gondola cars; for the Waste Pits Project, this means the project requires less blend material to achieve shipping based radiological constraints.
- Due to additional engineering improvements at their rail car rollover facility, Envirocare was able to raise the radiological limits for thorium-230 associated with emptying railcars at the facility from 5,000 pCi/g to 10,000 pCi/g for Fernald's waste-pit materials. Again this increased flexibility results in the need for less blending stock to achieve the Envirocare disposal criteria.
- Envirocare has provided additional flexibility on the range of acceptable moisture contents for the waste-pit material received at the facility. This particular change reduces the need for soil based blending stock for the higher moisture content pit wastes.

In addition to these modifications, the Waste Pits Project has received sufficient quantities of soil destined for off-site disposal from other site projects that can – along with the remaining Pit 4 cap soils – meet the needs for construction of various working ramps and corridors within the waste pit excavation area.

And lastly, the projections for future soil volumes that are destined for off-site disposal through the Waste Pits Project further demonstrate that sufficient soil will be available to meet the remaining blending needs for the final segments of the project. As a result of these cumulative modifications and operational flexibilities, the amount of blending material originally believed necessary to satisfy implementation constraints has decreased to a readily manageable quantity.

- The amendment to the Operable Unit 1 ROD to permit placement of the Pit 4 soil cover material into the On-site Disposal Facility, as identified in this plan, will complete the documentation process.

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CLARIFICATION OF TERMINOLOGY

This Proposed Plan also provides additional detail for certain terminology used in waste-pits project planning and implementation documents. The intent of these clarifications is to provide clearer definitions of the individual remediation elements comprising the Operable Unit 1 scope (such as the interfaces between the caps, waste materials, liners, and underlying soils for each of the pits), and provides clarification of final grading and restoration activities for the Operable Unit 1 area after waste processing operations are complete.

These clarifications will assist in defining the endpoints of the project, and the work scope handoffs between the Waste Pits Project (i.e., Operable Unit 1) and the Soil and Disposal Facility Project (i.e., Operable Unit 5) that will perform the final step of soil remediation beneath the pits.

Liners: During the original pit construction, the liners for pits 1, 2, 3 and 4, the Burn Pit, and the Clearwell were constructed from on-site native clay. The liners were either "dug into" existing clay, or constructed from clay brought in from another area of the site. In contrast, the liners for pits 5 and 6 were constructed of a synthetic barrier positioned over the in-place clay. For purposes of scope definition for the final segment of the project, a representative technical demarcation is needed between the clay liner material and the underlying subsurface soil, for those pits that do not have a synthetic barrier in place. For these pits, the first six inches of clay below the waste/clay interface will be removed and automatically shipped off site as waste.

The remaining clay material beneath the six-inch layer will be addressed in the follow-up subsurface-soil sampling and excavation efforts to be performed by the Soil And Disposal Facility Project as directed by the Operable Unit 5 ROD.

Caps: For each of the waste pits, the type of material used for capping the pit varies. Similar to liners, cap material for each pit is defined as material that is readily distinguishable from waste material. Other than the proposed decision in this Proposed Plan to permit a portion of the Pit 4 cap soil to be disposed of in the On-site Disposal Facility, the remaining cap materials will be (or have been) shipped off site for disposal along with the waste materials.

The final element of the Operable Unit 1 remedy described in the 1995 ROD, *"placement of backfill into excavations and construction of cover system"*, requires additional clarification~~definition~~ to complete~~support~~ Waste Pit Project closeout planning, consistent with the site-wide natural resource restoration activities underway as part of Operable Unit 5.

Once all waste pit and subsurface soil excavations are complete, and remediation certification of the area has been accomplished to satisfy the Operable Unit 5 soil cleanup levels, the project area will be regraded consistent with the Waste Pits Project Excavation Plan and the site's ~~final~~ Operable Unit 5 site-wide Natural Resource Restoration Plan.

As these plans convey, seeding of the final graded surface will take place consistent with the Soil Conservation Service and Ohio Department of Natural Resources "Rainwater and Land Development" guidance. Consistent with these plans and the other areas of the site being restored under Operable Unit 5 requirements, once Operable Unit 5 soil cleanup levels are achieved, no specially-designed Operable Unit 1 cover system will need to be installed over the project area to fulfill Operable Unit 1 project obligations.

Readers should note that the concept of restoring the Operable Unit 1 excavation footprint to achieve the site-wide restoration plan developed under Operable Unit 5 was formally acknowledged in both the July 1995 Operable Unit 1 Remedial Design Work Plan and the January 2002 draft of the Natural Resource Restoration Plan. For clarification, this Proposed Plan (and the subsequent ROD Amendment) restates the restoration approach already acknowledged in these implementation plans, and formally removes the requirement to install a specially designed cover system over the Operable Unit 1 excavation area, once waste pit excavation activities are complete and Operable Unit 5 soil cleanup levels within the Operable Unit 1 boundary are achieved.

Comparison of the Proposed Changes with the 1995 Operable Unit 1 ROD

Comparative evaluations of the two proposed changes described in this plan with the 1995 and 1996 Operable Unit 1 and 5 RODs were conducted employing the nine evaluation criteria defined in the National Contingency Plan as the framework for identifying technical and administrative differences for consideration.

The first two evaluation criteria – overall protection of human health and the environment and compliance with ARARs – are considered threshold criteria that must be attained by the selected remedial action. Readers should note that ARARs under this Proposed Plan and the ROD Amendment remain unchanged from the original Operable Unit 1 ROD.

The next five criteria include short-term protectiveness, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, implementability, and cost.

These criteria are considered primary balancing criteria, which are looked at collectively to arrive at the best overall solution that offers the best balance of tradeoffs among the criteria.

The final two criteria – state acceptance and community acceptance – are evaluated following receipt of comments on the Proposed Plan, and are incorporated, as appropriate, into the final decision described in the ROD Amendment.

Table ~~2~~3 provides a summary of the comparative evaluations for the two proposed changes using the nine CERCLA National Contingency Plan criteria as the guiding framework.

Findings and Conclusions

In summary, DOE and EPA conclude that the proposed changes for the Waste Pits Project maintain the protectiveness of the original Operable Unit 1 remedy while providing enhancements in remedy implementation and cost effectiveness.

As a result, DOE and EPA are recommending the implementation of the proposed changes as the preferred approach for the project.

Explanation of the CERCLA Nine Criteria

DOE and EPA use the following nine criteria from the National Contingency Plan to compare and evaluate the cleanup alternatives. The nine criteria are categorized into three groups: *Threshold Criteria*, which must be met by each alternative in order to be eligible for selection; *Primary Balancing Criteria*, which are balanced against each other to achieve the best overall solution; and *Modifying Criteria*, which are evaluated following receipt of comments on the Proposed Plan.

Threshold Criteria	Primary Balancing Criteria	Modifying Criteria
1. **Overall Protection of Human Health and the Environment.** Assessment of the degree to which the cleanup alternative eliminates, reduces, or controls threats to public health and the environment. 2. **Compliance with Applicable or Relevant and Appropriate Requirements.** An evaluation of whether or not the alternative attains applicable or relevant and appropriate requirements (ARARs) under federal environmental laws or state environmental or facility siting laws.	1. **Long-Term Effectiveness and Permanence.** The cleanup alternative is evaluated in terms of its ability to maintain reliable protection of human health and the environment over time. 2. **Reduction of Toxicity, Mobility, or Volume Through Treatment.** An evaluation of how well a cleanup alternative reduces the harmful nature of the contamination at the site; the ability of the contamination to move from the site into the surrounding area; and the amount of contaminated material remaining following implementation of the remedy. 3. **Short-Term Effectiveness.** The length of time needed to implement a cleanup alternative is considered. DOE and EPA also assess the risks and adverse impacts that carrying out the cleanup alternative may pose to workers and nearby residents. 4. **Implementability.** An assessment of how difficult the cleanup alternative will be to construct and operate, and whether the technology is readily available. 5. **Cost.** A comparison of the costs of each alternative. Includes capital, operation, and maintenance costs. CERCLA and the National Contingency Plan require that a selected remedy be cost effective, which is defined as a remedy that has costs that are proportionate to overall effectiveness.	1. **State Acceptance.** DOE and EPA take into account whether or not the state agrees with the recommended change, and considers state comments in the development of the Proposed Plan and the ROD Amendment. 2. **Community Acceptance.** DOE and EPA will consider the comments of local and other affected residents on the recommended alternative presented in this Proposed Plan. Responses to the comments raised during the public comment period will be provided in a document called a Responsiveness Summary, which will be attached to the ROD Amendment.

Table 3
CERCLA Nine-Criteria Summaries for the Two Proposed Plan Changes

	National Contingency Plan Criteria And Original Operable Unit 1 and 5 Decisions	Change No. 1 – Adjustment of Soil Remediation Levels	Change No. 2 – On-site Disposal of Pit 4 Cap Materials
Threshold Criteria	***1. Overall protection of human health and the environment.*** The selected remedies in the Operable Unit 1 and 5 RODs are considered health protective as they will achieve EPA-approved risk based levels at remedy completion.	The Operable Unit 5 ROD soil cleanup levels were developed to be protective of human health consistent with the target land use as an undeveloped park. They are also protective of the Great Miami Aquifer at the target risk level. A decision to align the Operable Unit 1 levels with the Operable Unit 5 site-wide levels continues to achieve the threshold criteria of a remedy that is protective of human health and the environment.	The Waste Acceptance Criteria for the On-site Disposal Facility were developed to ensure protection of human health and the environment. Therefore, a decision to place Pit 4 cap material that has been demonstrated to meet the onsite waste acceptance criteria results in a remedy that continues to achieve the threshold criteria of a remedy that is protective of human health and the environment.
	2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs). Both the Operable Unit 1 and 5 remedies achieve compliance with all ARARs or have been granted the necessary EPA-approved waivers and/or exemptions.	The Operable Unit 1 and 5 RODs provide a list of the ARARs the selected remedy and associated soil cleanup levels must attain. A decision to adopt the Operable Unit 5 cleanup levels for soils within the Operable Unit 1 boundary is consistent with and does not alter the original ARARs for either ROD.	The Operable Unit 1 and 5 RODs provide a list of the ARARs the selected remedy and associated soil cleanup levels must attain. A decision to place the waste-acceptance-criteria-compliant Pit 4 cap soils into the On-site Disposal Facility is consistent with and does not alter the original ARARs for either ROD.
Primary Balancing Criteria	***3. Long-Term Effectiveness and Permanence.*** The Operable Unit 5 selected remedy reduces the residual risks associated with contaminated soil by leaving no contaminated material above health-based remediation levels, and therefore provides a remedy that is effective and permanent.	A decision to adopt the Operable Unit 5 cleanup levels for soils within the Operable Unit 1 boundary will continue to provide a remedy that achieves long-term effectiveness and permanence.	The On-site Disposal Facility relies on engineering measures and institutional controls (waste acceptance criteria) to ensure the long-term performance of the facility for waste acceptance criteria-compliant materials. A decision to place the compliant Pit 4 cap material into the On-site Disposal Facility does not compromise the effectiveness or permanence of the facility.
	4. Reduction of Contaminant Toxicity, Mobility, or Volume Through Treatment. Neither the Operable Unit 1 or 5 ROD remedies employ treatment as a principal element to further reduce contaminant toxicity, mobility, or volume. The statutory preference for treatment was considered adequately satisfied by the selected actions considering the waste forms, contaminant types, and disposal options.	As documented in the Operable Unit 1 and 5 RODs, treatment of contaminated soil was not adopted as a main component of the remedy. This change remains consistent with the earlier decision.	As documented in the Operable Unit 1 and 5 RODs, treatment of contaminated soil was not adopted as a main component of the remedy. This change remains consistent with the earlier decision.
	5. Short-Term Effectiveness. The selected remedies in the Operable Unit 1 and 5 RODs considered the short-term risks associated with remedy implementation during the original trade-off analyses. While the risks can never be fully eliminated, they can be effectively controlled through application of mitigative measures and reduction of haul distances and excavation volumes to the minimum health-protective levels.	Short-term risks associated with cleanup to the revised technetium-99 level will likely be the same or less than the original Operable Unit 1 remedy, because less soil volume may require excavation compared to original estimates. The preponderance of short term risks are derived from construction-related injuries which are in turn directly linked to the amount of material handled.	Disposition of cap material in the On-site Disposal Facility could reduce the short-term risks by decreasing the potential for injuries associated with transporting the material off-site. Short term risks in this instance are linked to not only the amount of material handled, but also the haul distance involved. In this case, for this material the haul distances have been shortened by nearly 1800 miles.
	6. Implementability. The selected remedies in the Operable Unit 1 and 5 RODs were considered implementatable at the time of the original decisions. More than 5 years of history has been gained for each remedy that has proven their overall implementability and effectiveness.	This change does not alter the physical implementation methods of the original remedies. Therefore this factor is not materially affected by the change proposed in this plan.	The physical implementation of this proposed change eliminates the need for rail loadout and transportation. These elements are replaced by truck transport to the On-site disposal facility, which has been demonstrated to be implementatble over 5 years of operations.
	7. Cost. The original Operable Unit 1 and 5 ROD remedies were found to have costs that were proportionate to the effectiveness achieved.	While the soil volume impacts associated with this change cannot be accurately defined (since the materials reside beneath the pits), it is projected that the savings will be significant and can help support other high-priority cleanup initiatives. Since the proposed change is targeted to still achieve health-based levels at completion, effectiveness is not reduced.	Cost savings from disposing of Pit 4 Cap material in On-site Disposal Facility as an alternative to off-site disposal at Envirocare is approximately $4.5 million. Since the Pit 4 cap material has been demonstrated to meet the On-site disposal Facility Waste Acceptance Criteria, health-based requirements will continue to be achieved and therefore effectiveness will not be reduced.
Modifying Criteria	***8. State Acceptance.*** The Ohio EPA had an opportunity to review and participate in the original Operable Unit 1 and 5 ROD decisions and concurred with the original remedies that were selected.	The Ohio EPA has had an opportunity to review and participate in the proposed change, and has indicated that they concur with the recommendation.	The Ohio EPA has had an opportunity to review and participate in the proposed change, and has indicated that they concur with the recommendation.
	9. Community Acceptance. As prescribed under CERCLA, the original Operable Unit 1 and 5 RODs provided formal opportunities for gaining community acceptance. Community concerns were addressed in the formal Resonsiveness Summaries attached to the RODs.	Similar to the original RODs, DOE and EPA will consider comments provided by the community on both proposed changes, which will be addressed in a Responsiveness Summary as part of the ROD Amendment.	Similar to the original RODs, DOE and EPA will consider comments provided by the community on both proposed changes, which will be addressed in a Responsiveness Summary as part of the ROD Amendment.

PUBLIC INVOLVEMENT ACTIVITIES

The community is encouraged to read and provide comments on the revised cleanup plan for the Waste Pits Project at the Fernald Closure Project. A final decision will be made only after hearing and considering community comments and concerns. Based on those comments, the Proposed Plan may be modified, based on information gathered from the community during the comment period.

DOE and EPA will consider public comments received during a 30-day comment period from XXXXX to XXXXX, 2003. A public meeting will be held during the comment period to explain the Proposed Plan and accept oral and written comments.

Additional copies of the Proposed Plan and the supporting documents are available from the Administrative Record locations both at the Fernald Public Environmental Information Center and at the EPA offices in Chicago, Illinois. Addresses for these two Administrative Record locations are provided below. In addition to the prepaid comment form attached to this Proposed Plan, your comments may also be submitted electronically or by mail to:

Mr. Gary Stegner	Mr. Jim Saric
U.S. Department of Energy Fernald Closure Project P.O. Box 538705 Cincinnati, OH 45253-8705 Email: gary.stegner@fernald.gov 513-648-3153	U.S. EPA, SRF-5J 77 W. Jackson Blvd. Chicago, IL 60604-3590 Email: saric.james@epamail.epa.gov 312-886-0992

The date, time, and location of the public meeting and the dates for the comment period will be announced in the local media and are posted at the Administrative Record locations. Addresses and hours for the Administrative Record locations are as follows:

Public Environmental Information Center	U.S. EPA Region V
Located at the Fernald Closure Project Site 7400 Willey Road Hamilton, OH 45013-9402 513-648-7480 Tuesday and Thursday, 7:30 a.m. to 4:30 p.m.	U.S. EPA, SRF-5J 77 W. Jackson Blvd. Chicago, IL 60604 312-886-0992

OHIO EPA INVOLVEMENT

The **Ohio EPA** is participating in the RI/FS and remedial action processes at the Fernald Closure Project. For additional information concerning the state's role in the cleanup process at the Fernald Closure Project or regarding the specifics of this Proposed Plan contact:

Tom Schneider
Fernald Project Manager
Ohio Environmental Protection Agency
401 E. Fifth St.
Dayton, OH 45402-2911

513-285-6466

Key Documents From Administrative Record File

Fernald Environmental Management Project (FEMP):

- 1994, *Remedial Investigation Report for Operable Unit 1.* Prepared under contract for the U.S. Department of Energy: Fernald Field Office, Fernald, OH. (AR Index Numbers U-003-304.17-22)
- 1994, *Feasibility Study for Operable Unit 1.* Prepared under contract for the U.S. Department of Energy: Fernald Field Office, Fernald, OH. (AR Index Numbers No. U-003-404.13-15)
- 1994, *Proposed Plan for Remedial Actions at Operable Unit 1.* Prepared under contract for the U.S. Department of Energy: Fernald Field Office, Fernald OH. (AR Index Numbers: Vol. I-IV and U-003-405.4)
- 1995, *Record of Decision for Operable Unit 1.* EPA ID OH6890008976: ROD ID EPA/ROD/R05-95/286. (AR Index Number: U-003-501.3) [abstract at hhtp://www.epa.gov/superfund/sites/rods/index]
- 2002, *Explanation of Significant Differences for Operable Unit 1.* Prepared under contract for U.S. Department of Energy, Fernald Field Office.

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COMMENT FORM

Your input on the Proposed Plan for amending the Operable Unit 1 ROD to accommodate the revised cleanup plan for the Waste Pits Project is important. Public comments assist DOE and EPA in selecting the final cleanup plan.

You may use the space below to write your comments about both of the alternatives described in this Proposed Plan. After making your comments, please fold, tape (no staples), and mail this prepaid form. We must receive your comments on or before the close of the public comment period on XXXXX, 2003. If you have questions about the comment period or the upcoming public meeting, contact Gary Stegner in DOE's Public Information Office at (513) 648-3153. Those with electronic capabilities may submit their comments to DOE via E-mail to: gary.stegner@fernald.gov.

(BELOW INFORMATION IS OPTIONAL)

Name: _____

Address: _____

City: _____

Phone: _____

Mailing List Additions

Please add my name to the Fernald Mailing List to receive additional information on the cleanup progress at the Fernald Environmental Management Project.

Yes _____ **No** _____

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US DEPARTMENT OF ENERGY
PO BOX 538705
CINCINNATI OH 45253-8705

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For More Information

Additional information or related cleanup documents are available to the public at the following location:

Public Environmental Information Center
Fernald Closure Project
7400 Willey Road
Hamilton, OH 45013-9402

513-648-3153

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