

**COMPREHENSIVE LEGACY MANAGEMENT
AND
INSTITUTIONAL CONTROLS PLAN**

VOLUME II

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



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VOLUME II

INSTITUTIONAL CONTROLS PLAN

TABLE OF CONTENTS
VOLUME II
INSTITUTIONAL CONTROLS PLAN

	<u>Page</u>
1.0 Introduction.....	1
1.1 Purpose and Organization of this Institutional Controls Plan.....	3
1.2 Summary of Support Documents.....	3
1.3 Definition and Purpose of Institutional Controls.....	4
1.4 Types of Institutional Controls	5
1.5 Agency Requirements for Institutional Controls	5
1.6 Updates to the Institutional Controls Plan	5
2.0 Controls On Disturbance and Use of the FCP.....	7
2.1 FCP Site	7
2.1.1 Proprietary Controls and Points of Contact.....	7
2.1.2 Governmental Controls	7
2.1.3 Preventing Unauthorized Use of FCP	8
2.1.3.1 Informational Devices	8
2.1.3.2 Security of Site Facilities and Infrastructure	9
2.1.3.3 Routine Inspection of Property	9
2.2 OSDF	9
2.2.1 Proprietary Controls and Points of Contact.....	10
2.2.2 Governmental Controls	10
2.2.3 Preventing Unauthorized Use	10
3.0 Controls to Minimize Human and Environmental Exposure to Residual Contaminants.....	14
3.1 FCP Site	14
3.1.1 FCP Site Inspections.....	14
3.1.2 Surface Water Discharge.....	14
3.1.3 Groundwater Remedy and Monitoring	14
3.2 OSDF	15
3.2.1 OSDF Inspection and Maintenance.....	16
3.2.2 Leak Detection/Leachate Monitoring	17
3.2.3 Leachate Management	18
4.0 Contingency Planning	23
5.0 Information Management for FCP Institutional Controls.....	25
5.1 FCP Site	25
5.1.1 Inspection Data/Results.....	25
5.1.2 Public Access to Information	25
5.2 OSDF	25
5.2.1 Inspection Records	25
5.2.2 Monitoring Data	25
5.2.3 Public Access to Information	25
5.3 Reporting.....	26
5.3.1 Routine Reporting	26
5.3.2 CERCLA Five-Year Review.....	26
References	27

**TABLE OF CONTENTS
(Continued)****LIST OF TABLES**

Table 2-1	Controls on Disturbance and Use of the FCP Site	11
Table 2-2	Controls on Disturbance and Use of the OSDF	12
Table 3-1	Controls to Minimize Human and Environmental Exposure to Residual Contaminants for FCP Site	19
Table 3-2	Controls to Minimize Human and Environmental Exposure to Residual Contaminants for OSDF	20

LIST OF FIGURES

Figure 1	Fernald Future Use.....	6
Figure 2	Fernald Institutional Controls	13

APPENDICES

Appendix A	Cleanup Program Status
Appendix B	Institutional Control Requirements as Stated in the Records of Decision
Appendix A	Fernald Closure Project Contact Information
Appendix B	Example of OSDF and FCP Site Inspection Forms

LIST OF ATTACHMENTS

Attachment A	Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Treatment
Attachment B	Post Closure Care and Inspection Plan
Attachment C	Groundwater/Leak Detection and Leachate Monitoring Plan

LIST OF ACRONYMS

CAWWT	Converted Advanced Waste Water Treatment
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of federal regulations
DOE	Department of Energy
GJO	Grand Junction Office
EPA	Environmental Protection Agency
FCP	Fernald Closure Project
GWLMP	Groundwater/Leak Detection and Leachate Monitoring Plan
GMA	Great Miami Aquifer
GMR	Great Miami River
IC(s)	institutional control(s)
IEMP	Integrated Environmental Monitoring Plan
LCS	leachate collection system
LDS	leak detection system
LMICP	Comprehensive Legacy Management and Institutional Controls Plan
NARA	National Archives Record Administration
NPDES	National Pollutant Discharge Elimination System
NRRP	Natural Resource Restoration Plan
OMMP	Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Project
OSDF	On-Site Disposal Facility
OU	operable unit
PCCIP	Post Closure Care and Inspection Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	record of decision
US	United States
WAC	waste acceptance criteria

1.0 INTRODUCTION

The Fernald Closure Project (FCP) is situated on a 1,050-acre tract of land, approximately 18 miles northwest of Cincinnati, Ohio. The FCP site is located near the unincorporated communities of Ross, Fernald, Shandon and New Haven. Land use in the area consists primarily of residential areas, farming, gravel excavation operations, light industry and parks.

The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) is the primary driver for environmental remediation of the FCP. The site was divided into five operable units and a Remedial Investigation and Feasibility Study (RI/FS) was conducted for each unit. Based on the results of the RI/FS, Records of Decision (RODs) were issued outlining the selected remedy for each Operable Unit (OU).

- **Operable Unit 1, Waste Pits Area** – The remedy for OU1 includes removing all material from the waste pits, stabilizing the material by drying, and shipping it off-site for disposal.
- **Operable Unit 2, Other Waste Units** – The remedy for OU2 includes removing material from the various units, disposing of material that meets the on-site waste acceptance criteria (WAC) in the On-site Disposal Facility (OSDF), and shipping all other material off-site for disposal. WAC were developed by DOE and regulators to strictly control the type of waste disposed on site. The WAC are documented in the Waste Acceptance Criteria (WAC) Attainment Plan for the On-site Disposal Facility (DOE 1998a)
- **Operable Unit 3, Production Area** – The OU3 remedy includes decontaminating and decommissioning all contaminated structures and buildings, recycling waste materials if possible, disposing of material that meets the on-site WAC in the OSDF, and shipping all other material off-site for disposal.
- **Operable Unit 4, Silos 1–4** – The OU4 remedy includes removal and treatment of all material from the silos and shipping it off-site for disposal.
- **Operable Unit 5, Environmental Media** – OU5 includes all environmental media, including soil, surface water, groundwater and vegetation. The Sitewide Excavation Plan (SEP, DOE 1998b) describes the remediation of soils. The OU5 ROD (DOE 1996) describes the approved remediation method of pump-and-treat for groundwater.

As of April 2004, the following cleanup benchmarks have been achieved:

- 734,799 Tons of Waste Pits material have been shipped off site and 107 unit trains have made the round trip from Fernald to the Envirocare disposal facility in Utah;
- More than 1.39 million cubic yards of contaminated soil and debris (construction materials from buildings, including steel and other metals, drywall, electrical supplies, transite, roofing materials, wood, glass, etc.) has been excavated and placed in the OSDF;
- 6 of 8 Individual disposal cells are in place;

- 9 of 10 Uranium production plants have been dismantled;
- 159 Individual structures have been dismantled;
- Nuclear materials disposition is complete;
- 6.4 Million cubic feet of low-level waste has been shipped by truck to the Nevada Test Site for disposal;
- 57 Percent of the 1050-acre site footprint has been certified as meeting radiological and chemical cleanup levels; and
- 14.9 Billion gallons of contaminated groundwater has been pumped and treated, as necessary, to achieve surface water discharge limits.

A more detailed summary of the cleanup program status is included as Appendix A. Upon closure, all that will remain will be the ongoing actions necessary to achieve final cleanup of the Great Miami Aquifer restoration and the legacy management activities necessary to accommodate and maintain the designated final land use.

Ecological restoration follows remediation and is the final step to completing cleanup of the site. Ecological restoration is being implemented in order to begin to facilitate settlement of a 1986 State of Ohio Claim against the Department of Energy (DOE) for injuries to natural resources at Fernald under CERCLA. Settlement of the claim is still in the negotiation stages. Restoration activities at the site are also being implemented to address wetland mitigation requirements under the Clean Water Act and to stabilize and revegetate areas impacted during remediation. The approach to ecological restoration of the FCP is outlined in the Natural Resource Restoration Plan (NRRP, DOE 2002). Compliance with the 2002 NRRP is a closure contract commitment for Fluor Fernald, Inc.

The anticipated closure of the Fernald Closure Project is March 2006. At that time, the OSDF, located on the eastern side of the FCP will be complete. The OSDF will consist of 8 disposal cells and will cover an area of approximately 123 acres, including the surrounding buffer area. Approximately 904 acres of the FCP property will be ecologically restored, having been graded following excavations, amended, and seeded/planted or otherwise enhanced to create ecosystems comparable to native pre-settlement southwestern Ohio. A few facilities may remain on site following remediation. These include the Converted Advanced Wastewater Treatment (CAWWT) facility and supporting infrastructure, extraction wells, and associated piping and utilities, the outfall line to the GMR, and a few office trailers (Figure 1).

The DOE Office of Environmental Management is responsible for the remediation of the FCP. Post-remediation responsibilities will transition to the DOE Office of Legacy Management. The Office of Legacy Management will be responsible for the post-remediation operations, maintenance and enforcing of ICs at the site.

1.1 Purpose and Organization of this Institutional Controls Plan

This Institutional Controls Plan (IC Plan) outlines the institutional controls (ICs) that will be established and enforced once remediation is completed at the Fernald Closure Project (FCP). This IC Plan will document DOE's approach to maintaining ICs as required by United States Environmental Protection Agency (EPA) guidance. The ICs outlined in this Plan are designed to ensure the continued protection of human health and the environment following closure of the site. The Office of Legacy Management is responsible for monitoring, maintaining, reporting on and implementing ICs at the FCP. This Plan will be updated as the site moves towards closure and more detail regarding implementation of the IC Plan is identified. In addition, changes to any of the support plans attached to this IC Plan may trigger revisions to the IC Plan.

This IC Plan is Volume 2 of a two-volume document, the Comprehensive Legacy Management and Institutional Controls Plan (LMICP). The Legacy Management Plan (formerly the Comprehensive Long-Term Stewardship Plan) is Volume I of the document. The Legacy Management volume describes the policies that pertain to legacy management, and what is required at the FCP for legacy management purposes. The IC Plan volume of the document serves as the "umbrella" document providing the overview and approach to implementing ICs at the FCP. The detailed, subject specific documents attached to this Plan provide further detail and more subject specific information regarding ICs and other post-closure activities. These documents include the Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Project (OMMP, DOE 2004a, Attachment A); Post Closure Care and Inspection Plan, On-site Disposal Facility (PCCIP, DOE 2004b, Attachment B); and the Groundwater/Leak Detection and Leachate Monitoring Plan (GWLMP, DOE 2004c, Attachment C). The three support documents are enforceable by the U.S. EPA.

1.2 Summary of Support Documents

The OMMP establishes the design logic and priorities for the major flow and water treatment decisions needed to maintain compliance with the FCP's NPDES permit and ROD (OU 5) based surface water discharge limits. The OMMP is designed to guide and coordinate the extraction, collection, conveyance, treatment and discharge of all groundwater, storm water, sanitary and remediation wastewater generated sitewide through the duration of the cleanup program. A summary of the information contained in the OMMP is included in Section 3.1.3, Groundwater Remedy and Monitoring. Periodic reviews and updates of the OMMP will be conducted to respond to needed changes in program emphasis or the addition of new components, as necessary.

The PCCIP addresses the inspection, monitoring and maintenance activities necessary to ensure the continued proper performance of the OSDF. Key concepts addressed include ownership; access controls and restrictions; deed and/or use restrictions; environmental monitoring; leachate

management; inspections; custodial maintenance; contingency repair; corrective actions; emergency notifications; reporting; and public involvement. Additional details from this plan are included in Section 3.2.1, OSDF Inspection and Maintenance. The PCCIP will continue to be updated throughout the closure period as needs and requirements for the care of the OSDF change. Section 11.2 of the PCCIP lists conditions under which the PCCIP may require modification.

The GWLMP specifies the frequencies and parameters being monitored in four horizons for each cell of the facility. These horizons are the leachate collection system (LCS), the leak detection system (LDS), perched water in the glacial overburden, and the Great Miami Aquifer (GMA) (both up- and down- gradient of each cell). Cell-specific data from these four horizons are evaluated holistically in order to verify the integrity of the cells. To date the data from this comprehensive leak detection program indicate that the liner systems for the existing cells (Cells 1, 2, and 3) are performing within the specifications established in the OSDF design documentation. The GWLMP is a "living document," that is, it will be modified over time as the OSDF is constructed and the individual cells are capped. These modifications will be based on the data collected prior to and just after capping. The final version of the GWLMP will govern the post closure leak detection and leachate monitoring program for the OSDF and will be attached to the final version of this IC Plan. Further details from the GWLMP are included in Section 3.2.2, Leak Detection/Leachate Management and Table 3-2.

1.3 Definition and Purpose of Institutional Controls

ICs are important to help minimize the potential for exposure to and release of residual contaminants, ensuring the protection of human health and the environment. ICs are also important in helping to protect engineered remedies by providing a means to ensure the remedy remains effective, is not showing signs of failure, or is not being vandalized or damaged by outside elements (natural or human) in any way.

The EPA, in draft guidance documents, has defined ICs as administrative and/or legal controls (i.e., non-engineered) that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy. ICs work by limiting land or resource use by providing information to modify or guide human behavior at the site.

DOE has defined ICs as mechanisms designed to appropriately limit access to or uses of land and facilities, to protect cultural and natural resources, to maintain physical security of DOE facilities, and to prevent or limit inadvertent human and environmental exposure to residual contaminants. ICs include methods to preserve knowledge and to inform current and future generations of hazards and risks (DOE 2000).

Although the DOE and EPA definitions differ slightly, (DOE includes physical controls, such as fences and gates, as institutional controls) they both focus

on the same goal, to protect human health and the environment from residual hazards.

1.4 Types of Institutional Controls

The ICs that will be used at the FCP during legacy management, and are outlined in this plan, can be grouped into two categories, which are described below. The site was also divided into two sub-areas for IC purposes: the FCP site and the OSDF. The OSDF includes the disposal facility and its buffer area. This area will be enclosed by a fence and locked at all times, unless authorized personnel require access. The FCP site is all of the remaining property on site. The FCP site will be an accessible area to employees and the public, with only very small, fenced off, restricted area. The two areas are treated separately because of the greater restrictions that apply to the OSDF.

Controls on Disturbance and Use of the FCP (Section 2.0) – describes ICs that will apply to both the FCP Site and the OSDF that are designed to limit access and land use. This category of controls will focus on ensuring the FCP remains in a configuration consistent with the designated land use and that unauthorized uses of the FCP do not occur. These include proprietary controls; governmental controls; and preventing unauthorized use by means of informational devices, security, physical barriers and routine inspections. Tables 2-1 and 2-2 are a summary of these controls.

Controls to Minimize Human and Environmental Exposure to Residual Contaminants (Section 3.0) – Describes the controls (i.e., monitoring and sampling) used to ensure continued protection of human health and the environment. This category of controls will focus on maintaining engineered systems and infrastructure that are designed to protect human health and the environment. These include routine inspections, permits, continuing remedial activities, routine maintenance and monitoring, and leachate management practices. Tables 3-1 and 3-2 are a summary of these controls.

1.5 Agency Requirements for Institutional Controls

The need for ICs is described in the OU 2 and OU 5 RODs (Appendix B). The intent of the IC Plan is to describe the physical controls on access as well as the administrative and other ICs that will be implemented at the FCP. This IC Plan will be submitted to the U.S. EPA under the OU 5 ROD as a primary document. This IC Plan is an enforceable document with U.S. EPA.

1.6 Updates to the Institutional Controls Plan

Updates to this Plan will be managed by the Office of Legacy Management. Updates may be completed on an as-needed basis, based on results of the site and OSDF inspections and monitoring. The Plan will also be reviewed every five years in conjunction with the CERCLA five-year review. Updates may also be made at that time. Any proposed updates will be subject to review by the Regulatory Agencies.

FERNALD LEGACY MANAGEMENT

Future Use

LAND USE

- 395 acres of Woodlots
- 327 acres of Prairie
- 81 acres of Wetlands
- 60 acres of Open Water
- 75 acres of OSDF
- 33 acres of Savanna
- 30 acres of Development Area
- 49 acres of Infrastructure / Set Aside



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2.0 CONTROLS ON DISTURBANCE AND USE OF THE FCP

2.1 FCP Site

The primary ICs on disturbance and use of the general FCP site include limiting access and land use, ensuring the site configuration remains consistent with designated land use (non-residential and non-agricultural uses only), and preventing unauthorized use of the FCP. The institutional controls for disturbance and use of the FCP are summarized in Table 2-1.

2.1.1 Proprietary Controls and Points of Contact

“Proprietary” controls are those controls that originate from the responsibilities associated with the ownership of property. These controls are established to ensure that the FCP site remains in a configuration consistent with the designated land use and ensuring unauthorized uses do not occur. In the case of the FCP, the federal government will maintain ownership of the FCP, as stated in the OU2 ROD (DOE 1995). Primary and secondary points of contact will be established to ensure authorized and emergency access (Appendix C). In the event of an emergency on-site, unacceptable behavior is observed, or someone has questions, the points of contact should be contacted. The following list of actions will be prohibited to ensure ongoing protection of the site itself and for anyone using the site. Prohibited actions will be clearly posted along the site perimeter, including access points. The following land use restrictions are not intended to be all-inclusive and will be finalized in this document’s final version prior to closure.

- No removal or intentional damage of plants by unauthorized personnel.
- No removal or intentional damage of archaeological materials (as defined in the Archaeological Resources Protection Act).
- No swimming or wading in creeks, ponds or wetlands.
- No soil excavation for any reason by unauthorized personnel.
- No vehicles may leave designated roads.
- No dumping of any kind on the FCP.
- No smoking in prohibited areas, fires or other open flames.

Land use restrictions may be modified or terminated in consultation with USEPA.

2.1.2 Governmental Controls

A part of the governmental controls at the FCP will be the use of real estate notations and restrictions, should they become necessary. Notations on land records or similar restrictive real estate licenses will be in place for the FCP and off-site property that is impacted by FCP site activities. The Office of Legacy Management will ensure the real estate notations remain in place, as long as they are needed. In

addition, should there be a transfer of ownership of any part of the site, DOE will ensure compliance with Section 120(h) of CERCLA regarding transfer of ownership. Per the OU2 and OU5 RODs, deed restrictions, if implemented, will be reviewed on a regular basis by the Office of Legacy Management to ensure they remain in effect with the local authorities. A review of notations or real estate restrictions and other ICs will also be part of the CERCLA five-year review process.

In the event that DOE transfers management of or leases the property to an entity other than DOE, the appropriate restrictions and limitations will be communicated and implemented (e.g. zoning restrictions). A description of the various types of ICs pertaining to ownership and/or transfer of DOE land is included in *Selecting and Implementing Institutional Controls in RCRA and CERCLA Response Actions at Department of Energy Facilities (DOE 2000)*.

For lands transferred to other Federal agencies, proprietary controls may not be an option because a deed does not exist or the landholding Federal agency lacks the authority to encumber the property. In such cases, DOE will work with the agency to ensure that institutional controls for the active site will remain effective. This may be documented in a memorandum of understanding or other appropriate instrument.

2.1.3 Preventing Unauthorized Use of the FCP

2.1.3.1 Informational Devices

Postings placed along the perimeter of the FCP, at all access locations, and on fences and gates will indicate site access restrictions, activity restrictions, and contact information. The OSDF restricted area, the CAWWT and fenced extraction wells will be posted (see Section 2.2.3) (Figure 2).

2.1.3.2 Security of Site Facilities and Infrastructure

Site facilities and structures will be locked when personnel are not present during “non-business” hours. Some site infrastructure such as the OSDF restricted area, the CAWWT an un-housed extraction wells, will have fences constructed around them to prevent unauthorized access. Controls also include enforcing the land use restrictions, maintaining fences and other infrastructure (as needed), and replacing or updating postings as needed to ensure the security of the site (Figure 2).

2.1.3.3 Routine Inspection of Property

Inspection of site property and infrastructure will be conducted on a quarterly basis. Inspections will include such things as fences, signs/postings, and the condition of perimeter areas, roadways, pathways, and access points (Figure 2). The attached example inspection checklist (Appendix D) outlines important components of all inspections for the FCP site (all areas outside the OSDF). The inspections will focus on key parameters to ensure that the primary institutional controls for the FCP are being maintained. The inspections will also include consultation with the public, regulatory agencies, local emergency response personnel and other key stakeholders. Ensuring that legacy management information is being managed and made available, as required by this LMICP, is also a key component of the inspections.

In addition to site inspections, agreements may be reached with the local law enforcement authorities to make perimeter checks of the site on a more frequent basis. Any unauthorized behavior noticed should immediately be reported to the site contact immediately.

2.2 OSDF

The primary ICs for the disturbance and use of the OSDF include limiting access to the OSDF and preventing unauthorized use of the OSDF and its associated buffer area. Engineered barriers, such as fencing, gates and locks are also important ICs (Figure 2). The ICs are summarized in Table 2-2. The table includes a description of the IC, where else the IC is referenced and what requirements drive the ICs. Primary and secondary points of contact will be established to ensure authorized and emergency access, and open communication (Appendix C).

2.2.1 Proprietary Controls and Points of Contact

“Proprietary” controls are those controls that originate from the responsibilities associated with the ownership of property. The first is that the federal government will maintain property ownership in perpetuity, as stated in the OU2 ROD. A second is that primary and secondary points of contact will be established to ensure authorized and emergency access, and open communication.

2.2.2 Governmental Controls

A fundamental part of governmental controls will be the use of real estate notations and restrictions. Notations on land records or similar restrictive real estate licenses will be in place for the land occupied by the OSDF. The Office of Legacy Management will ensure the real estate notations remain in place. DOE will also maintain the responsibility to manage and maintain the OSDF and all other activities needed to ensure that remedies remain effective. Any contract support required to implement specific aspects of maintenance and monitoring will be made aware of all restrictions on use and disturbance of the OSDF.

2.2.3 Preventing Unauthorized Use

Physical barriers to restrict access to the OSDF and its surrounding buffer area will include exclusion fencing, gates and locks, which will be maintained. Signs and postings will include information on restrictions, access information, contact information, and emergency information (Figure 2).

**TABLE 2-1
CONTROLS ON DISTURBANCE AND USE OF THE FCP SITE**

CONTROL	REQUIREMENT	FREQUENCY	SCOPE
PROPRIETARY CONTROLS 1. Establish points of contact 2. Ownership	1. DOE legacy management Guidance 2. OU 2 ROD OU 5 ROD DOE legacy management Guidance	1. Initially and when updates are needed 2. NA	1. Provide primary and backup points of contact for emergencies. Points of contact will be updated in the Legacy Management Plan as needed. DOE-LM 24-hour emergency line is 877-695-5322. 2. Federal government will maintain ownership of site property. Management will transition from the DOE Office of Environmental Management to the DOE Office of Legacy Management.
GOVERNMENTAL CONTROLS 1. Notations on land records or real estate restrictive license	1. OU 2 ROD OU 5 ROD	1. Annual verification	1. If oversight of portions of the FCP property (outside of the disposal facility area) is transferred at any time, all zoning and real estate restrictions will be communicated to the appropriate parties, and proper notifications will be provided as required.
PREVENTING UNAUTHORIZED USE OF THE FCP 1. Access controls 2. Routine Site Inspections	1. OU 2 ROD OU 5 ROD 2. OU 2 ROD OU 5 ROD	1. Quarterly 2. Quarterly	1. In order to maintain the integrity of the site, access may need to be limited or restricted in some areas. Signs indicating restricted access will require monitoring and maintenance to ensure their legibility and integrity. 2. Inspections will be conducted to ensure infrastructure, signs/posting, fences/gates, perimeter areas, and access points are in a secure and safe configuration per FCP Site Areas Post Closure Inspections Checklist (Appendix B).

**TABLE 2-2
CONTROLS ON DISTURBANCE AND USE OF THE OSDF**

CONTROL	REFERENCE	REQUIREMENT	FREQUENCY	SCOPE
PROPRIETARY CONTROLS 1. Establish points of contact 2. Ownership	1. PCCIP 2. PCCIP	1. OAC 3745-27-11(B)(3) OAC 3745-66-18(c)(3) OAC 3745-68-10 40 CFR Sec. 258.61(c)(2) 40 CFR Sec. 265.118(c)(3) 40 CFR Sec. 264.118(b)(3) 2. OU2 ROD OU5 ROD	1. Initially and when updates are needed 2. NA	1. Provide primary and backup points of contact to ensure authorized and emergency access. Points of contact are provided in Table 4-2 of the PCCIP. Updates will be provided as needed. DOE LM 24-hour emergency number is 877-695-5322. 2. The federal government will maintain property ownership of the area comprising the OSDF and associated buffer areas. Management will transition from the DOE Office of Environmental Management to the DOE Office of Legacy Management.
GOVERNMENTAL CONTROLS 1. Notations on land records or real estate restrictive license	1. PCCIP	1. OU2 ROD OU5 ROD	1. NA	1. If in place, verify on an annual basis real estate restrictions are still in place. Restrictions will be provided in the deed, and proper notifications will be provided as required.
PREVENTING UNAUTHORIZED USE OF THE FCP 1. Informational devices 2. Engineered barriers	1. PCCIP 2. PCCIP	1. OU2 ROD 2. OU2 ROD	1. NA 2. NA	1. Signs and postings will include information on restrictions, access information, contact information, and emergency information. 2. Access to the OSDF will be physically restricted by means of fences, gates and locks.

FERNALD LEGACY MANAGEMENT

Institutional Controls

INSTITUTIONAL CONTROLS

- Controls on Disturbance and Use
- Controls to Minimize Human and Environmental Exposure to Residual Contamination
- Information Management for Institutional Controls



- ▼ POSTING
- FENCE
- ⚡ GATE



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3.0 CONTROLS TO MINIMIZE HUMAN AND ENVIRONMENTAL EXPOSURE TO RESIDUAL CONTAMINANTS

3.1 FCP Site

ICs will be established for the FCP site to minimize the potential of human and environmental exposure to residual contaminants, ensuring it is below acceptable limits. These include monitoring and sampling to ensure continued protection from exposure, and maintaining engineered systems and infrastructure designed to protect human health and the environment. Further details on these controls are discussed below and are included in Table 3-1.

3.1.1 FCP Site Inspections

DOE will conduct quarterly FCP site inspections to ensure there are no activities being conducted on site that would pose a threat to human health or the environment. After a year, the frequency of the inspections will be re-evaluated. A list of prohibited activities will be posted along the site perimeter and at access points. Inspections of the area outside the OSDF will be performed per the FCP Site Area Post Closure Inspection Checklist (see example, Appendix D) and will ensure that infrastructure designed and in place for the protection against human exposure to contaminants, such as fences and signs, are in good condition and functioning as intended. More frequent inspections may be required under certain circumstances (a pattern of unauthorized activities or uses). If warranted, more frequent inspections will be carried out to ensure site restrictions are being maintained (Figure 2, Appendix D).

3.1.2 Surface Water Discharge

Until the groundwater remedy is complete, a National Pollutant Discharge Elimination System (NPDES) permit or similar permit mechanism will need to be in place for surface water discharge to the GMR. Monitoring and reporting to maintain compliance with the permit requirements will be part of post-closure responsibilities at the FCP. Completion of the groundwater remedy will include the close out of the permit for surface water discharge. If prior to completion of the remedy it is decided that it is no longer necessary to monitor a particular outfall location, it may be removed from the permit at that time.

3.1.3 Groundwater Remedy and Monitoring

Aquifer restoration operations and maintenance activities are part of an on-going remedial action governed by the OU5 ROD. The requirements for the operations and maintenance activities are outlined in the OMMP (DOE 2004, Revision 1, Attachment A). The OMMP, as originally written, defines the operating philosophy for the extraction and re-injection treatment systems (re-injection is not being used at this time); establishment of operational constraints and conditions for given systems; and the establishment of the process

for reporting and instituting corrective measures to address exceedences in discharge limits. How to address exceptional operating conditions is also addressed.

Section 2.0 of the OMMP discusses the general commitments of the aquifer restoration. Provided are details regarding the aquifer cleanup levels, discharge limits, groundwater treatment capacity, groundwater treatment decisions, extraction rates and injection rate and quality (although injection is no longer used).

Section 3.0 of the OMMP goes into more specific detail about the design of the groundwater remediation systems, well field designs, and pump details. Section 4.0 discusses the projected flow during remediation activities. Section 5.0 discusses the Operations Plan, Section 6.0 discusses Operations and Maintenance, and Section 7.0 discusses Roles and Responsibilities. Section 6.0 and 7.0 provide information that pertain directly to ICs.

Once the groundwater remedy has been certified as complete (which will be defined in a Groundwater Certification Plan that is due to the EPA prior to the end of 2005) by DOE and approved by EPA, the well field infrastructure will be decommissioned and dispositioned as necessary. Post-remedy groundwater monitoring requirements (if any) will be defined as part of the groundwater remedy certification, and incorporated into a later version of this Plan. Any additional groundwater monitoring would be carried out along with the other requirements of this Plan and evaluated as part of the CERCLA five-year reviews.

3.2 OSDF

ICs will be established for the OSDF and its buffer area to ensure the prevention of human and environmental exposure to residual contaminants. Further details about these controls are discussed below and are included in Table 3-2. Details regarding OSDF inspection and maintenance, leak detection/leachate monitoring and leachate management are included in the PCCIP (Attachment B). The OSDF was constructed to permanently contain impacted materials derived from the remediation of the operable units at the FCP. All material placed in the OSDF is required to meet pre-established waste acceptance criteria (WAC). The WAC are presented in Table 3-1 of the PCCIP. The PCCIP also provides a description of the types of material or material categories (Table 3-2, PCCIP) that are allowed in the OSDF. The design and construction of the OSDF is described in Section 3.0. Section 4.0 of the PCCIP discusses the ICs for the OSDF, which have been included and summarized in this IC Plan. Table 4-1 of the PCCIP shows ICs for the OSDF as they were identified in the OU 2 and OU 5 RODs.

Section 5.0 of the PCCIP discusses environmental monitoring activities that are necessary to continue during the post-closure care period, including air monitoring, groundwater monitoring, and other media (i.e., surface water, vegetation, etc.).

Section 6.0 provides in depth descriptions of the Leachate Management System, which is comprised of the leachate collection system and the leak detection system. This is discussed in Section 3.2.2 of this IC Plan. It provides the basic system operations, operation procedure information and inspection and maintenance activities. The inspection and maintenance activities are illustrated in Table 6-1 of the PCCIP and are used as part of the ICs for the OSDF. Section 6.7 discusses management of the leachate extracted from the OSDF, which is addressed in Section 3.2.3 of this IC Plan. Section 7.0 addresses routine inspections, which are important ICs. Section 3.2.1 of this IC Plan addresses these inspections in detail.

Also addressed in the PCCIP are unscheduled inspections (Section 8.0), custodial monitoring and contingency repairs (Section 9.0), and emergency notifications (Section 11.0).

3.2.1 OSDF Inspection and Maintenance

DOE will conduct inspection and maintenance on the cap and cover system. Inspections will be conducted quarterly until closure of the OSDF, then the frequency of inspections will be re-evaluated. Custodial and preventative maintenance and unscheduled inspections will be conducted as needed. Table 3-2 of this IC Plan provides current details on the required inspection and maintenance.

Routine inspections include monitoring the health of the vegetative cover; the existence of burrowing animals; the extent of surface erosion or cracking; subsidence, if any; extent of any leachate seeps; integrity of run-off controls; and integrity of benchmarks. If determined necessary or appropriate, the frequency of the routine inspections may be revised through the CERCLA five-year reviews. Routine custodial maintenance includes upkeep of vegetative cover; general mowing; clearing of debris and woody plants, and reseeding.

Unscheduled inspections will be conducted as needed if specific circumstances warrant. Examples would include follow-up on the completion of a maintenance action or cap inspection after an unusually large storm event. Based on the results and determinations made from the inspections, DOE will take appropriate actions to address any identified problems.

Maintenance and monitoring of the general support systems for the OSDF will include ensuring physical access controls and restrictions are maintained, routine inspections of the OSDF and surrounding area, routine maintenance activities, and environmental monitoring. Table 3-1 of this IC Plan provides additional detail on the required monitoring and maintenance.

The federal government will remain the property owner and access to the OSDF and associated buffer area will continue to be restricted in perpetuity by means of fences, gates, locks, and warning signs (Figure 2). Access is anticipated to be limited to personnel conducting inspections, custodial maintenance, and corrective action, and will be authorized by the federal government only.

Routine inspections will include evaluating the condition of physical access controls (fences, gates, locks, and signs); observing adjacent properties for evidence of land use changes; evaluating natural drainage courses in the immediate vicinity; and inspecting the general area for erosion, excess sediment, seepage and signs of human or animal intrusion. If determined necessary or appropriate, the frequency of the routine inspections may be revised through the CERCLA five-year reviews. More frequent monitoring is always a possibility, due to changes in the cap or surrounding areas; however, a decrease in frequency would require discussion, review and approval at the time of the five-year review.

3.2.2 Leak Detection/Leachate Monitoring

Routine OSDF leak detection and leachate monitoring is currently governed by the GWLMP (Attachment C). Section 3.0 of the GWLMP provides the regulatory analysis and strategy for the OSDF monitoring. The regulatory drivers come from the ARARs identified in the OU 2, 3 and 5 RODs. Section 4.0 of the plan provides significant detail on the OSDF leak detection monitoring program. The text includes the program elements, monitoring frequencies, selection of analytical parameters and data evaluation. Section 5.0 is a discussion of the leachate monitoring program. It discusses the management approach and monitoring needs. Section 6.0 provides the reporting requirements and notification and response actions for when there is excessive leak detection, which could be an indication of a failure in the cap or liner and could pose a threat to human health or the environment. Table 6-1 of the plan outlines these actions in detail.

3.2.3 Leachate Management

Also involved in the maintenance and monitoring of the OSDF system is the management of the leachate that enters the LCS. Additional information regarding leachate management is also found in Section 6.7 of the PCCIP (Attachment B). It is envisioned that leachate will continue to be treated on-site until weekly amounts collected are too small to continue operation of the on-site treatment facility. The leachate will be treated in the Converted Advanced Waste Water Treatment facility (CAWWT) as long as it is in operation. Treated leachate will be discharged to the GMR with other wastewater collected. Once the CAWWT is dismantled, leachate may be collected and transported for treatment off-site or treated as necessary in a small facility near the OSDF (post-closure leachate flow is anticipated to be < 1 gpm for the entire facility). The quantity of leachate collected, treated and discharged will continue to be documented. Leachate will be sampled and analyzed for a set of parameters specified in the OSDF GWLMP.

**TABLE 3-1
CONTROLS TO MINIMIZE HUMAN AND ENVIRONMENTAL EXPOSURE TO RESIDUAL CONTAMINANTS FOR THE FCP SITE**

CONTROL	REQUIREMENT	FREQUENCY	SCOPE
FCP SITE INSPECTIONS	OU 2 ROD OU 5 ROD	Quarterly initially. Frequency will be re-evaluated after the first year and through the CERCLA five year review process	<ul style="list-style-type: none"> • Inspect infrastructure in place for the protection against human exposure to contaminants, such as fences and postings, to ensure proper condition and function. • Inspect to ensure prohibited activities, such as digging, off-road travel, fishing or hunting, are not taking place on site.
SURFACE WATER DISCHARGE	IEMP	Quarterly initially. Frequency will be re-evaluated after the first year and through the CERCLA five year review process.	<ul style="list-style-type: none"> • Inspect surface water drainages and discharge to ensure water is not being impacted by other means, and that drainages are functioning properly.
GROUNDWATER REMEDY AND MONITORING	OMMP	Frequency of sampling and monitoring of groundwater is dependent upon the effectiveness of the remediation efforts and will vary over time.	<ul style="list-style-type: none"> • Monitor groundwater to ensure remedy is functioning properly until remedy certification is complete. Details are provided in the OMMP.

**TABLE 3-2
CONTROLS TO MINIMIZE HUMAN AND ENVIRONMENTAL EXPOSURE TO RESIDUAL CONTAMINANTS FOR THE OSDF**

CONTROL	REFERENCE	REQUIREMENT	FREQUENCY	SCOPE
OSDF INSPECTION AND MAINTENANCE 1. Routine OSDF cap inspection	1. PCCIP	1. OAC 3745-66-18(A) & (C) 40 CFR Sec. 264.118(b)(2) 40 CFR Sec. 265.118(c)(2) OU 5 ROD	1. Quarterly until closure, semi-annual Note that the monitoring frequency may be re-evaluated through the CERCLA five year review process	1. Detect and record any change of the following: <ul style="list-style-type: none"> • General health, density and variety of vegetative cover • Evidence of burrowing animals on the cover • Presence, depth, and extent of erosion or surface cracking, indicating possible cap deterioration • Visibly noticeable subsidence, either locally or over a large area • Presence and extent of visible settlement, including a determination of whether observed settlement is sufficient to pond water • Presence and extent of any leachate seeps • Integrity of run-on and run-off control features <ul style="list-style-type: none"> • Integrity of benchmarks The process for contingency planning and notification is provided in Section 4.0.
2. Unscheduled OSDF cap inspection	2. PCCIP	OU 5 ROD	2. As needed	2. Unscheduled inspections will be carried out as needed under specific circumstances (e.g., follow-up on maintenance, after significant natural events). Follow-up or contingency inspections will be conducted no more than 30 days after repair (see Section 4.0) to investigate and quantify specific problems encountered during a routine scheduled inspection, special study, or other DOE/regulatory agency activity. Follow-up inspections determine whether the cover/cap stability is threatened, and evaluate the need for maintenance/repair/corrective action. Contingency inspections may be situation-unique inspections ordered by DOE or regulatory agencies.

**TABLE 3-2
(Continued)**

CONTROL	REFERENCE	REQUIREMENT	FREQUENCY	SCOPE
3. Routine OSDF cap custodial and preventative maintenance	3. PCCIP	3. OAC 3745-66-18(A) & (C) 40 CFR Sec. 264.118(b)(2) 40 CFR Sec. 265.118(c)(2) OU 5 ROD OU 2 ROD	3. As needed (mowing of entire OSDF will occur at least once annually in late fall)	3. Routine custodial and preventative maintenance consists of the following: upkeep of the vegetative cover, general mowing, clearing of debris, removal of woody weeds and seedlings, reseeding
4. Routine OSDF site area inspection	4. PCCIP	4. OAC 3745-66-18(A) & (C) 40 CFR Sec. 264.118(b)(2) 40 CFR Sec. 265.118(c)(2) OU 5 ROD OU 2 ROD	4. Semi-annual Note that the monitoring schedule may be revised through the CERCLA five year review process	4. <ul style="list-style-type: none"> • Inspect the adjacent area within approximately 0.25 miles of the OSDF buffer area. Describe evidence of land use changes. • Inspect the adjacent area within approximately 0.25 miles of the OSDF buffer area. Describe evidence of land use changes. • Evaluate natural drainage courses in the immediate vicinity of the OSDF to determine whether there is a threat to the OSDF integrity. Walk approximately 1,000 feet of adjacent natural drainage courses and note unusual or changed sediment deposits, large debris accumulations, man-made or natural constrictions, and recent or potential channel changes. • Evaluate and record the development of gullies. • Evaluate growth of vegetation in channels. • Determine the condition and required maintenance of on-property roads. • Inspect and record the area adjacent to the OSDF for erosion channels, accumulations of sediment, evidence of seepage, and signs of animal or human intrusion.

**TABLE 3-2
(Continued)**

CONTROL	REFERENCE	REQUIREMENT	FREQUENCY	SCOPE
5. Unscheduled OSDF site area inspection	5. PCCIP	OU 5 ROD OU 2 ROD	5. As needed	5. Investigate reports that site integrity may be compromised. Follow-up or contingency inspections will be conducted to investigate and quantify specific problems encountered during a routine scheduled inspection, special study, or other DOE/regulatory agency activity. Determine whether the support systems are threatened, and evaluate the need for maintenance/repair/corrective action. Contingency inspections are situation-unique inspections ordered by DOE when it receives information indicating that site integrity has been or may be threatened.
6. Routine OSDF site area custodial and preventative maintenance	6. PCCIP	6. OAC 3745-66-18(A) & (C) 40 CFR Sec. 264.118(b)(2) 40 CFR Sec. 265.118(c)(2) OU 5 ROD	6. As needed (mowing will occur at least once annually in late fall)	6. <ul style="list-style-type: none"> • Repair/replace fencing, gates, locks, and signs due to normal wear, severe weather conditions, or vandalism. • Mow/clear undesired woody vegetation, reshape, reseed, repair banks, unplug culverts, and clean out channels of run-on/run-off diversion channels.
LEAK DETECTION/ LEACHATE MONITORING	1. PCCIP & GWLMP	1. OAC 3745-27-10 OAC 3745-54-90 through 99	1. To be evaluated following closure of the facility	1. A routine monitoring program will be maintained for four zones within and beneath the OSDF. These zones include the LCS, the LDS, the LDS, perched water within the glacial overburden, and the Great Miami Aquifer (GWLMP Section 3.2.1). Samples from the four zones will be collected and analyzed pursuant to requirements set forth in a future revision to the GWLMP.
2. Other OSDF environmental monitoring	2. PCCIP	2. DOE 5820.2A, Chapter III(3)(k)	2. To be evaluated following closure of the facility.	2. A site wide monitoring program may be required for at least a portion of the initial (30-year) post closure period. The specific parameters and frequencies will be presented in a future version of this Plan.
LEACHATE MANAGEMENT	PCCIP	OU 5 ROD GWLMP	As needed	Leachate will be treated on-site until weekly amounts collected are too small to continue on-site treatment. At that time, treatment will be off-site.

4.0 CONTINGENCY PLANNING

In the event that an unacceptable condition or disturbance occurs at the FCP during legacy management, corrective actions will be employed and appropriate notification will occur. Unacceptable conditions regarding disturbance or use of the FCP may include: unauthorized access to the site (e.g., off-road vehicles); attempts to use soil or water on the site in an inappropriate manner; attempts to access the OSDF; or damage to fencing, gates or postings. Unacceptable conditions related to exposure to residual contaminants could include damage or disruption to the OSDF or attempts to utilize groundwater still undergoing remediation.

To the extent that contingency actions can be anticipated or planned, they have been (and will continue to be) incorporated into the LMICP or attached support plans. Unanticipated contingency actions will be subject to CERCLA processes prior to implementation. The regulatory agencies, public and other stakeholders will be notified of any unanticipated contingency actions under CERCLA that has to be implemented.

Site inspections, monitoring and maintenance activities are designed to identify problems before they develop into a need for corrective action. In the unlikely case that a natural event, vandalism, or other event, threaten the integrity or operation of the OSDF or remainder of the site, corrective actions will be carried out to mitigate the problem. In addition, DOE will evaluate the factors that caused the problem and ensure that the possibility of recurrence is minimized or avoided.

The Office of Legacy Management will notify U.S. EPA and Ohio EPA of any IC breaches and DOE's plan for correcting them upon discovery of the situation. Final plans for other stakeholder notifications, as appropriate, will be described in the final version of this IC Plan issued prior to closure. Any activity that is inconsistent with the IC objective or use restrictions will be addressed by the Office of Legacy Management as soon as practical, but in no case will the process be initiated later than 10 days after the Office of Legacy Management becomes aware of the violation.

The DOE will notify U.S. EPA and Ohio EPA regarding how the DOE has addressed or will address the breach within 10 days of sending U.S. EPA and Ohio EPA notification of any activity that is inconsistent with the IC objective or use restriction or any action that interferes with the effectiveness of ICs. A follow-up inspection will occur within 30 days of the completion of any corrective action. The results of follow-up inspections will be provided to U.S. EPA and Ohio EPA.

Minor maintenance actions such as seeding small areas, minor erosion repairs on OSDF or other parts of site, replacement of postings and signs, minor fence and gate repair and minor maintenance of site infrastructure will not be subject to the notification process described above. The need for minor maintenance will be identified on routine inspection forms issued to U.S. EPA and Ohio EPA and will be subject to follow-up inspections as discussed above.

The Office of Legacy Management will send letters to the Hamilton County Sheriff's Department, Butler County Sheriff's Department, and both Ross and Crosby Township police and fire officials requesting that they notify the Office of Legacy Management in the event they observe an unauthorized human intrusion or unusual natural event. The U.S. Geological Survey National Earthquakes Information Center in Denver will be sent a letter by the Office of Legacy Management requesting that they notify the Office of Legacy Management in the event of an earthquake in the vicinity of the FCP. The Office of Legacy Management will also monitor emergency weather notification system announcements.

The public may use the 24-hour security telephone numbers monitored at the DOE Office at Grand Junction to notify the Office of Legacy Management of site concerns. The 24-hour security telephone numbers will be posted on the site perimeter, access points and other key locations on the site.

THE 24-HOUR EMERGENCY NUMBER

970-248-6070 OR 877-695-5322

5.0 INFORMATION MANAGEMENT FOR FCP INSTITUTIONAL CONTROLS

Information that is needed for IC purposes will be managed by the Office of Legacy Management, as the steward of the FCP. Any centralized system to provide stakeholders with access to information will also be managed by the Office of Legacy Management (see Table 6-1 in the legacy management Plan). Copies of selected information or data documenting past remedial activities (e.g., soil certification) and the design and contents of the OSDF will be retained and managed by the Office of Legacy Management for IC purposes. In addition, newly acquired information or data related to remedy performance will be readily available to stakeholders.

5.1 FCP Site

5.1.1 Inspection Data/Results

Inspection data will include information from inspections of the general site area, perimeter, access points, infrastructure, and signs and postings. The FCP Site Inspection Form (Appendix D) will be used to collect the data.

5.1.2 Public Access to Information

The Office of Legacy Management will make available to the public documents pertaining to FCP site inspections. These will include inspection forms, maintenance information and reports from non-routine inspections. These documents will be available on or near the FCP site. Additional information on information management and public access is presented in Volume 1 of this LMICP. It is also expected that information related to legacy management will be available through the Office of Legacy Management.

5.2 OSDF

5.2.1 Inspection Records

Inspection data will include information from inspections of the OSDF cap, infrastructure (e.g., LCS/LDS pipe networks), perimeter fencing, buffer area, and signs and postings. The OSDF Cell Post Closure Inspection Checklist (Appendix D) and the LCS/LDS Inspection Checklists will be used to collect the data.

5.2.2 Monitoring Data

Monitoring data will include monitoring of the leachate collection system, groundwater monitoring and any other environmental monitoring data that is required.

5.2.3 Public Access to Information

Data and Information pertaining to inspection and monitoring of the OSDF will be made available to the public. These will include routine inspection forms and checklists, monitoring data, and maintenance reports. These documents will be available on or near the FCP site.

Additional information on information management and public access is presented in Volume 1 of the LMICP.

5.3 Reporting

5.3.1 Routine Reporting

The Office of Legacy Management will issue annual reports to U.S. EPA, Ohio EPA and other key stakeholders, to be defined in a later version of this plan, providing information on ICs, monitoring, maintenance, site inspections and corrective actions. Once it is determined that the ICs are functioning, the remedy is performing as intended, and the GW remediation is effective, the reporting frequency may be re-evaluated. In the event of unacceptable conditions or disturbance, more frequent notification reporting will be required as defined in Section 4.0. There will be reporting associated with the integrated Environmental Monitoring Plan (IEMP) while the aquifer remedy is on going. It is anticipated that IEMP reporting requirements and the Office of Legacy Management reporting requirements to support surveillance and maintenance of the site will be integrated. Final plans for integrating reporting requirements will be provided in the final version of this Plan. Assuming reporting requirements are integrated, the IEMP will be attached to the final version of the LMICP.

5.3.2 CERCLA Five-Year Review

Under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), a review of the remedy at the FCP is required every five years. The CERCLA five-year reviews will focus on the protectiveness of the remedies associated with each of the five OUs. The IC portion of the CERCLA 5 year report will include the data collected from monitoring and sampling, summaries of the inspections conducted of the FCP site and OSDF site and cap during the five-year period, and a discussion on the effectiveness of the ICs. If a determination is made that a particular control is not meeting its objectives then planned corrective actions will be included in the report. The report will be written using the most recent guidance document available at that time.

An evaluation of the IC Plan will also occur as part of the five-year review. The effectiveness of ICs will be evaluated to determine if any update to the IC Plan is required. Any update to the IC Plan will be subject to review by the Regulatory Agencies.

REFERENCES

U.S. Department of Energy, 1995, "Record of Decision for Remedial Actions at Operable Unit 2", Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1996, "Record of Decision for Remedial Actions at Operable Unit 5", Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1998a, "Waste Acceptance Criteria Attainment Plan", Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1998b, "Sitewide Excavation Plan", Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2000, "Selecting and Implementing Institutional Controls in RCRA and CERCLA Response Actions at Department of Energy Facilities", DOE, Office of Environmental Policy and Guidance.

U.S. Department of Energy, 2002, "Natural Resource Restoration Plan", Draft Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2004a, "Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Project", Revision 1, DOE Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2004b, "Post-Closure Care and Inspection Plan, On-Site Disposal Facility", Revision 1, Fernald Environmental Management Project, DOE Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2004c, "Groundwater/Leak Detection and Leachate Monitoring Plan", Fernald Environmental Management Project, DOE Fernald Area Office, Cincinnati, Ohio.

APPENDIX A
CLEANUP PROGRAM STATUS

July 2004

FCP Cleanup Program Status

Project	Work Scope	Status as of April 2004	2006 Strategy	Completion
Aquifer Restoration	<ul style="list-style-type: none"> - Remediate contaminated portions (approx. 170 acres) of the Great Miami Aquifer - Treat stormwater and wastewater resulting from site remediation activities 	<ul style="list-style-type: none"> - Project - 66% complete - Extracted more than 14.9 billion gallons of water from the aquifer since 1993 - Treated more than 9.9 billion gallons of water - Removed more than 6,023 pounds of uranium from aquifer since 1993 - Successfully using re-injection well technology to speed aquifer remediation 	<ul style="list-style-type: none"> - All infrastructure will be in place by 2006 	2021
Building Demolition	<ul style="list-style-type: none"> - Dismantle 223 former production plants, support structures, and associated components 	<ul style="list-style-type: none"> - Project - 63% complete - Dismantled 159 structures - Completed Safe Shutdown in March 1999, two years ahead of schedule and \$7 million under budget - Current activities focused on D&D of Pilot Plant (last production plant standing) 	<ul style="list-style-type: none"> - Add work crews, safety personnel, and equipment - Expedite demolition of structures 	2006
Soil and Disposal Facility	<ul style="list-style-type: none"> - Remediate and dispose of contaminated soil - Certify site as clean and perform natural resource restoration 	<ul style="list-style-type: none"> - Project - 51 % complete - Cell 1 - filled and capped - Cell 2 - filled and capped - Cell 3 - 99% filled - Cell 4 - 66 % filled - Cell 5 - 13 % filled - Cell 6 - 9% filled - Cell 7 - under construction - Excavated and dispositioned over 1.39 million cubic yards of contaminated soil - Over 57% of the site is certified "clean" - Completed six natural resource restoration projects 	<ul style="list-style-type: none"> - Adopt self-performance and aggressive approach to work - Resequence work with more parallel activities - Greater integration with D&D and Waste Pit projects - Add Cell 8 to accommodate scope increase 	2006
Silos 1 and 2	<ul style="list-style-type: none"> - Remove 8,900 cubic yards of high activity low-level waste from two concrete silos - Chemically stabilize waste and ship off site for disposal 	<ul style="list-style-type: none"> - Project - 46 % complete - Construction - 75% complete - Accelerated Waste Retrieval Subproject - 100 % complete 	<ul style="list-style-type: none"> - Use commercial design-build approach to integrate project activities and accelerate schedule - Implement a detailed constructability process to maintain required coordination of efforts - Revise design to increase operating flexibility and reduce downtime - Develop options for transportation and disposal 	2006
Silo 3	<ul style="list-style-type: none"> - Remove 5,100 cubic yards of low-level waste from one concrete silo - Ship waste off site for disposal 	<ul style="list-style-type: none"> - Project - 78 % complete - Construction is 100% complete - Waste retrieval to begin in May 2004 - Shipping to begin in June 2004 	<ul style="list-style-type: none"> - Prepared ROD Amendment and Revised Proposed Plan to allow for treatment only as required to meet permitted disposal facility's waste acceptance criteria - Planning for opportunistic funding that would allow early completion 	2006

July 2004

Project	Work Scope	Status as of April 2004	2006 Strategy	Completion
Waste Pits	<ul style="list-style-type: none"> - Remediate the contents of six waste pits containing low-level radioactive waste byproducts of uranium and thorium processing 	<ul style="list-style-type: none"> - Project - 88 % complete - 115 unit trains pulling 6,830 cars have shipped 734,799 tons of waste 	<ul style="list-style-type: none"> - Operate dryers 24/7 to address increased waste tonnage - Lease additional railcars - Evaluate plans to reduce number of shipments to Envirocare 	2004
Waste Management	<ul style="list-style-type: none"> - Characterize, sample, package, and dispose of low-level radioactive, hazardous, and mixed waste site inventories - Provide site-wide support for waste planning and off-site shipping - Emphasize waste minimization, recycling or reuse wherever practical 	<ul style="list-style-type: none"> - Project - 99% complete - Shipped 6.4 million cubic feet low-level waste to the Nevada Test Site for disposal – 99% complete - Shipped 163,912 low-level liquid mixed waste off site for incineration – 93% complete - Transferred 588,207 cubic feet low-level waste to Waste Pits Remedial Action Project – 94% complete - Transferred 792,510 cubic feet low-level waste to OSDF – 100% Complete - Shipped 23,778 cubic feet low-level mixed waste off site for treatment – 89% complete - Dispositioned all containerized waste on Plant 1 Pad - Approximately 1,300 containers remaining in inventory - Continue characterization, visual inspection, and packaging of uranium waste 	<ul style="list-style-type: none"> - Maximize on site disposition of low-level waste - Pursue off-site treatment of mixed waste and low-level waste 	2004
Nuclear Material Disposition	<ul style="list-style-type: none"> - Characterize, package, and ship nuclear materials off site 	<ul style="list-style-type: none"> - Project – 100% complete - Dispositioned 31 million pounds of nuclear product through: <ul style="list-style-type: none"> ▪ Transfer to other DOE site for programmatic use ▪ Sale to private sector ▪ Transfer to Portsmouth Facility for interim storage under DOE's Uranium Facility Management Group (9.1 million net pounds transferred since June 1999) ▪ Burial of Department of Defense materials off site 		2002

APPENDIX B

INSTITUTIONAL CONTROL REQUIREMENTS AS STATED IN THE RECORDS OF DECISION

INSTITUTIONAL CONTROL REQUIREMENTS AS STATED IN THE RECORDS OF DECISION

Operable Unit 2 Record of Decision (DOE 1995)

The selected remedy will include the following as institutional controls:

- Continued federal ownership of the OSDF site
- OSDF access restrictions (fencing, gates, and warning signs) access will be controlled by proper authorization and is anticipated to be limited to personnel for inspection, custodial maintenance, or corrective action
- Restrictions on the use of property will be noted on the property deed before the property could be sold or transferred to another party
- Groundwater monitoring following closure of the on-site disposal facility

Operable Unit 5 Record of Decision (DOE 1996)

Long-term maintenance will be provided as part of the selected remedy. The selected remedy includes the following key components for institutional controls and monitoring:

- Continuation of access controls at the FCP, as necessary, during the conduct of remedial actions. Property ownership will be maintained by the federal government of the area comprising the disposal facility and associated buffer areas.
- Maintenance of remaining portions of the FEMP property (outside the disposal facility area) under federal ownership or control (e.g., deed restrictions) to the extent necessary to ensure the continued protection of human health commensurate with the cleanup levels established by the remedy. If portions of the FCP property are transferred or sold at any future time, restrictions will be included in the deed, as necessary, and proper notifications will be provided as required by CERCLA.
- Maintenance of the on-property disposal facility will be performed to ensure its long-term performance and the continued protection of human health and the environment.
- Conduct an environmental monitoring program during and following remedy implementation to assess the short- and long-term effectiveness of remedial actions.
- Provision of an alternate water supply to domestic, agricultural, and industrial users relying upon groundwater from the area of the aquifer exhibiting concentrations of contaminants exceeding the final remediation levels. The alternate water supply will be provided until such time as the area of the aquifer impacting the user is certified to have attained the final remediation levels.

APPENDIX C

FERNALD CLOSURE PROJECT CONTACT INFORMATION

EMERGENCY CONTACT

Grand Junction 24-hour Monitored Security Telephone Number
877-695-5322

PRIMARY CONTACT

Jane Powell
Department of Energy
Office of Legacy Management
Land and Site Management
Phone: 304-285-4687
Fax: 304-285-4100/0933
Email: jane.powell@netl.doe.gov

SECONDARY CONTACT

Jack Craig
Department of Energy
Office of Legacy Management
Office of Policy and Site Transition
Phone: 412-386-4754
Fax: 412-386-4775
Email: craig@netl.coe.gov

WEBSITES

Fernald site: <http://www.fernald.gov>

Office of Legacy Management site: <http://www.lm.doe.gov>

** This information will be updated as necessary.*

APPENDIX D

EXAMPLE OF OSDF AND FCP SITE INSPECTION FORMS

July 2004

OSDF Cell 1 Post Closure Inspection Checklist

Date of Inspection: _____
 Time of Inspection: _____
 Inspection By: _____

Weather Conditions: _____
 Temperature: _____ °F
 Transect Direction** _____

Wind Speed (Miles per hour) and Direction: _____

Inspection Component	Condition A* or U*	Comments	Corrective Action(s) Proposed	Reference Source
1. Entrance Road/Monitoring Access Road				
1A. Verify entrance gate, lock and signage are intact and in good working order.				PCC&IP 20100-PL-010 Rev. 1 July 97
1B. Verify that access gates are locked to prevent unauthorized entry.				"
1C. Visually observe condition of access road for signs of erosion, ruts, standing water, proper drainage and excess vegetation.				"
1D. Verify that access road surfacing, cross slope, reflectors, and signage are intact and in good condition.				"
2. Chain Link Fence and Signage				
2A. Walk length of fence and ensure fence, posts, etc. are intact and in good condition. Ensure that gates are closed/locked to prevent unauthorized entry.				PCC&IP & OSDF Tech Spec. #02831
2B. Verify that the proper signage is intact and in good condition at the following locations: Restricted Access; Certified Area; and Restored Area. (Some signs not installed at this time).				"
2C. Check for vegetation growing over fences, barricades, signs and any noxious vegetation per State of Ohio Regulations (attached) and invasive plants growing on or around OSDF perimeter.				"
3. Surface Water Management				
3A. Check integrity of drainage channels around OSDF for erosion or debris restricting water flow (see attached map). Build up of debris/sedimentation in drainage ditch is not to exceed 6 inches.				OSDF Tech. Spec. #02270; PCC&IP
3B. Visually check the integrity of RipRap in drainage channels for signs of deterioration or removal of rock.				See above & OSDF Tech. Spec. #02271
3C. Visually check for the presence of woody vegetation growing in drainage channels and in Rip-Rap				"
3D. Visually check the integrity of run-on and run-off control features including: Ditch checks, Gravity Inlet structures, and Culverts.				See above & Construction Drawing # 90X- 6000-G-00073

*A = Satisfactory *U = Unsatisfactory (comments required)

** Transect Direction should alternate each inspection (North to South & East to West)

OSDF Cell 1 Post Closure Inspection Checklist

Date of Inspection: _____
 Time of Inspection: _____
 Inspection By: _____

Weather Conditions: _____
 Temperature: 0F _____
 Wind Speed (Miles per hour) and Direction: _____
 Transect Direction** _____

Inspection Component	Condition A* or U*	Comments	Corrective Action(s) Proposed	Reference Source
4. (A) Final Cover				
4A. Walk cover and side slopes in 25-ft (+/- 5-ft) transects and visually inspect for the following items.**				PCC&IP
4A1. Inspect erosion rills/channels. Flag any observable rills/channels greater than 3 inches wide and 6 inches deep or excessive erosion.				"
4A2. Any observable depressions, settlement/subsidence, slumping or desiccation cracks. Flag any observable depressions, slumps, settlement/subsidence or desiccation cracks.				"
4A3. Any ponding or standing water. Flag any standing water.				"
4A4. Evidence of burrowing animals or other bio-intrusion. Flag any observable evidence of bio-intrusion.				"
4A5. Evidence of vehicle traffic on the OSDF cap.				"
4B. Walk toe of slope and visually inspect for the following:				PCC&IP & Phase III Drawgs #90X-6000-G- 00302 & 90X-6000-G- 00310
4B1. Evidence of settlement/subsidence, erosion, and seepage. Flag any observable evidence of settlement/subsidence, erosion, or seepage.				"
4B2. A 20-ft corridor at the toe for the presence of woody vegetation, siltation, and/or biointrusion. Flag any woody vegetation, siltation, and/or biointrusion.				"
4B3. Condition of rip-rap. Flag any observable abnormalities.				"
4C. Inspect toe at final cover for evidence of freezing or siltation. Flag any observable abnormalities.				"

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 ** Transect Direction should alternate each inspection (North to South & East to West)

OSDF Cell 1 Post Closure Inspection Checklist

Date of Inspection: _____
 Time of Inspection: _____
 Inspection By: _____

Weather Conditions: _____
 Temperature: 0F _____
 Wind Speed (Miles per hour) and Direction: _____
 Transect Direction** _____

Inspection Component	Condition A* or U*	Comments	Corrective Action(s) Proposed	Reference Source
4. (B) Final Cover — Vegetation				
4D. Walk cover and side slopes in 25-ft (+/- 5-ft) transects and visually check vegetative cover for the following:				OSDF Tech. Spec. #02930
4D1. General health of grass cover and signs of stressed or dead grass should be noted.				"
4D2. Adequate grass coverage/density with no bares spots greater than 3-ft in diameter. Flag any bare spots greater than 3-ft in diameter. Any areas with questionable vegetative coverage will be sampled for percent cover and type of vegetation using meter-square quadrats.				"
4D3. Inspect the cover for the presence of woody vegetation (i.e., trees or shrubs) or noxious/invasive plants growing. Flag any woody and/or noxious/invasive vegetation for removal/herbicide.				"
5. Cover Monitoring System				
5A. Visually inspect the integrity of the cover monitoring system: check Junction boxes, manholes, pressure transducer risers, soil water status nest headers, and settlement plates of the remote monitoring system for evidence of damage (see attached map). Check that lids and caps on enclosures are intact and in good working order.				OSDF Dwg. # 90X-5500-E-00581 & 90X-5500-G-00577
5B. Visually inspect monitoring system manholes and junction boxes for the presence of animals, insects, rodents or misc. biota. Note the presence or evidence of any biota.				"
5C. Visually inspect manholes and junction boxes and their immediate vicinity for the presence of standing water. Flag all standing water.				"
6. Groundwater Monitoring Wells				
6A. Visually inspect all groundwater wells for damage and integrity of well infrastructure.				PPC&IP
6A1. Groundwater Monitoring Wells				"
6A2. Horizontal Monitoring Wells				"

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OSDF Cell 1 Post Closure Inspection Checklist

Date of Inspection: _____
 Time of Inspection: _____
 Inspection By: _____

Weather Conditions: _____
 Temperature: 0F _____
 Transect Direction** _____

Wind Speed (Miles per hour) and Direction: _____

Inspection Component	Condition A* or U*	Comments	Corrective Action(s) Proposed	Reference Source
7. Miscellaneous				
7A. Visually inspect the integrity of survey benchmarks. Flag/note any abnormalities.				PPC&IP
7B. Visually inspect the integrity of the perched water interceptor trench (once installed). Note any abnormalities.				
7C. Visually observe/inspect the corridor 50-ft outside of OSDF for signs/evidence of land use changes, settlement/subsidence, erosion, standing water, encroachment, livestock grazing or noxious vegetation. Note any changes/abnormalities.				
7D. Visually inspect all infrastructure for any act of vandalism.				“
7E. List any other observations not noted in the categories above.				“

*A = Satisfactory *U = Unsatisfactory (comments required)

July 2004

FCP Site Area Post Closure Inspection Checklist

Date of Inspection: _____
 Weather Conditions: Sunny/PtSunny/Cloudy/PtCloudy/Rain/Snow
 Temperature: _____ °F Wind Speed (Miles per hour) and Direction: _____
 Inspection By: _____ Other observations _____

Inspection Component	Condition A* or U*	Comments	Corrective Action(s) Proposed	Reference Source
1. Disturbance and Use of FCP Site				
1A. Inspect access points to ensure that site restrictions and contact information are clearly posted.				LM & IC Plan
1B. Ensure that any perimeter gates/fences/barriers are in proper working condition.				"
1C. Visually inspect perimeter areas to ensure that no unauthorized use or disturbance is occurring.				"
1D. Note any change in adjacent off-property land use.				"
1E. Visually inspect site wetlands to ensure no dredge/fill or other type of disturbance is occurring.				Clean Water Act
1F. Visually inspect restored areas to ensure that prohibited Noxious weeds are not present.				Ohio Administrative Code
1G. Visually inspect northern portion of Paddys Run to ensure disturbance of Indiana Bat habitat is not occurring.				Endangered Species Act
1H. Annually verify that all Deed Restrictions and other Real Estate use restrictions are in place and are applicable.				LM & IC Plan
2. Prevent Human and Environmental Exposure to Residual Contaminants				
2A. Visually inspect infrastructure supporting Aquifer Remedy to ensure no unauthorized access or disturbance is occurring.				LM & IC Plan
2B. Visually inspect perimeter areas to verify that prohibited activities (e.g., digging, soil removal, swimming) are not occurring on FCP.				"
3. Information Management				
3A. Verify that site information is available to the public and other stakeholders as planned.				LM & IC Plan
3B. Verify that information on site inspections and maintenance is readily available.				LM & IC Plan
3C. Verify that requests for site information are being addressed and fulfilled as planned.				LM & IC Plan
3D. Verify that as-built drawings and information on OSDF contents and design are readily available.				LM & IC Plan

*A = Satisfactory *U = Unsatisfactory (comments and identification on site map required)

FCP Site Area Post Closure Inspection Checklist

Date of Inspection: _____
 Weather Conditions: Sunny/PtSunny/Cloudy/PtCloudy/Rain/Snow
 Temperature: _____ °F Wind Speed (Miles per hour) and Direction: _____
 Inspection By: _____ Other observations _____

Inspection Component	Condition A* or U*	Comments	Corrective Action(s) Proposed	Reference Source
4. Site Interviews				
4A. Contracted Land Manager – Identify any unusual occurrences or problems at FCP.				LM & IC Plan
4B. Site Information/Data Manager – Ensure site data is available and information is being managed as planned.				“
4C. Aquifer Restoration Manager – Verify that Aquifer remediation is progressing as planned and identify any unusual occurrences.				“
4D. Other staff as appropriate – Identify any problems or site issues.				“
4E. Hamilton County/Butler County Sheriff – Identify any concerns or issues.				“
4F. Ross/Crosby Township Police/Fire Departments - Identify any concerns or issues.				“
4G. Ohio “Call Before You Dig” Program Office - Ensure FCP information is properly noted to prevent unauthorized excavation on the site.				“
4H. Stakeholder Groups (e.g., FRESH, Post-Closure Coalition) – Identify any concerns or problems.				“
4I. Adjacent landowners.				

*A = Satisfactory *U = Unsatisfactory (comments and identification on site map required)

ATTACHMENT A

**OPERATIONS AND MAINTENANCE MASTER PLAN FOR
AQUIFER RESTORATION AND WASTEWATER TREATMENT**

ATTACHMENT B
POST CLOSURE CARE AND INSPECTION PLAN

ATTACHMENT C

GROUNDWATER/LEAK DETECTION AND LEACHATE MONITORING PLAN