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DESIGN CRITERIA PACKAGE FOR THE LIME SLUDGE PONDS

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

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U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

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Appendix A ARARs and TBCs for LSP Area

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LIST OF ACRONYMS AND ABBREVIATIONS

A/E	Architect/Engineer
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Bearings Manufacturers Institute
ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
ARAR	Applicable or Relevant and Appropriate Requirement
ARASA	alternative remedial action subcontractor approach
ARWWP	Aquifer Restoration and Waste Water Project
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society for Non-Destructive Testing
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWWA	American Water Works Association
BSL	Biodenitrification Surge Lagoon (BioSurge Lagoon)
CFR	Code of Federal Regulations
DCP	Design Criteria Package
DOE	United States Department of Energy
EPA	United States Environmental Protection Agency
FDF	Fluor Daniel Fernald
FEMP	Fernald Environmental Management Project
FRL	Final Remediation Level
HDPE	high-density polyethylene
ICS	Industrial Control and Systems Section
IEEE	Institute of Electrical and Electronics Engineers
LSP	Lime Sludge Pond
MSS	Manufacturers Standardization Society
NEMA	National Electrical Manufacturers Association
NETA	International Electrical Testing Association
NFPA	National Fire Protection Association
NRCS	Natural Resources Conservation Service
OAC	Ohio Administrative Code
ODNR	Ohio Department of Natural Resources
ODOT	Ohio Department of Transportation
OSDF	On-Site Disposal Facility
OU2	Operable Unit 2
P&ID	Piping and Instrument Drawing
PPE	personal protective equipment
S/RID	Standards/Requirements Identification Document
SP-7	Soil Pile 7
STD	Standard
SWRB	Storm Water Retention Basin
TBC	To Be Considered
UL	Underwriters Laboratories, Inc.
V	Volt
VOC	Volatile Organic Compound

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

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WAC	Waste Acceptance Criteria
WMP	Water Management Plan

000004

1.0 PROJECT DESCRIPTION

2160

The Lime Sludge Ponds (LSPs) are two unlined ponds (north and south) that received spent lime sludge from Fernald Environmental Management Project (FEMP) water treatment operations, neutralization of Boiler Plant blowdown, and coal pile storm water runoff. The sludge and runoff were pumped into these ponds and allowed to settle. The LSPs are located on the west side of the Former Production Area (FPA). A common earthen berm is located between the two ponds. The south pond has been inactive since 1964 and the north pond has been inactive since the early 1990s. Design drawings of the basins indicate that they were designed identically. Each pond was designed to be 100 feet by 200 feet at the bottom, have 2 horizontal to 1 vertical sideslopes, and a depth of 8.5 feet. However, the berm between the two LSPs and the perimeter berm around the south basin were raised to accommodate additional sludge. Due to the increased berm height, the south LSP contains more lime sludge than it was originally designed to hold. The north LSP was never used to design capacity and contains less sludge than it was originally designed to hold. The west side of the north LSP that was never filled with lime sludge is a low area that traps water and has developed into a wetland. This wetland will be replaced in a separate project from this LSP remedial action.

This Design Criteria Package (DCP) addresses the design criteria for the LSP Remedial Action (RA). The LSP RA described in this DCP consists of excavating impacted material and subsequently converting the LSPs into a water management facility (WMF) for storm water and contaminated water generated during remediation of the FPA. This will require excavation of approximately 30,000 cubic yards of impacted material, including 20,000 cubic yards of lime sludge and 10,000 cubic yards of berm material, soil and associated material. Most of this impacted material is anticipated to be placed in the On-Site Disposal Facility (OSDF) for permanent disposition. If material above the OSDF waste acceptance criteria (WAC) for radionuclides is encountered, it will be transported to Soil Pile 7 (SP-7), pending shipment to an off-site Permitted Commercial Disposal Facility. If encountered during excavation, Resource Conservation and Recovery Act (RCRA) waste materials will be containerized; RCRA wastes are not expected in the LSPs.

This DCP was developed consistent with the requirements in the Functional Requirements Document for the Operable Unit 2 (OU2) Waste Units. This DCP has been prepared in conjunction with the Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered (TBC)

requirements listed in Appendix A, appropriate United States Department of Energy (DOE) regulations and orders, United States Environmental Protection Agency (EPA) directives, and the FDF Standards/ Requirements Identification Documents (S/RIDs).

This DCP was prepared consistent with the outline provided in FEMP Engineering Procedure Number 12-4003, Design Criteria Package, Revision 2.

1.1 PROJECT SCOPE

The scope of this project and DCP includes Title II and III engineering services. Preliminary design services (Title I) for remediation of the LSPs were performed previously. Title II services include preparation of Certified for Construction design documents for the LSPs for both the excavation and conversion phases of the project. Title III services (construction phase engineering) will be performed during the RA construction phase of the project. Engineering services will be provided via a subcontract with an architect/engineer (A/E).

1.2 GENERAL DESCRIPTION OF THE DESIGN REQUIREMENTS

The LSP RA will be developed in accordance with the OU2 Record of Decision (ROD; DOE 1995a). The selected remedial alternative in the OU2 ROD is excavation of the impacted material from the LSPs and placement in the OSDF.

This section of the DCP addresses the following specific aspects of the project:

- RA approach (two major phases)
- Water management
- Construction of support facilities
- Quantity and cost estimates
- Title III engineering services.

The design will be performed by a subcontract A/E (Parsons) with oversight by Fluor Daniel Fernald (FDF).

1.2.1 Remedial Action Approach

The LSP RA design will address the following two major construction phases:

- Excavation (to remove impacted material)
- Conversion (developing LSPs into a WMF).

This DCP establishes the general performance requirements and design criteria for both phases. The design will be developed based on the assumption that a stand-alone contract will be awarded to perform both phases of construction.

1.2.1.1 Excavation Phase

The selected remedy for the LSPs requires excavation of impacted materials, including all man made material placed in the LSPs during DOE operations (sludge, pipes, pavement, etc.) and all material with contaminant concentrations above FRLs (the total uranium concentration of 82 mg/kg will be used as the FRL for LSP remediation). In addition to excavation, the RA will include material processing for specified size requirements, moisture control, and hauling this material to the OSDF. Impacted material also includes berm material used to increase the capacity of the south LSP. During the remediation design, the As Low As Reasonably Achievable (ALARA) level of 50 parts per million total uranium will be used as a maximum residual contaminant level in defining the excavation limit. Data from several sampling events indicate that the contaminant concentrations in the LSP area is below the ALARA concentration. The minimum excavation design limit will be established at one foot below the bottom of the design elevation of the lime sludge. After this limit is established, the excavation limits will be smoothed so they can be staked in the field and constructed.

Excavation will be in general accordance with Excavation Approach B of the Sitewide Excavation Plan [SEP (DOE 1998a)]; any exceptions will be presented in the design documents. Soil (non-lime sludge) material will be excavated and monitored in lifts; lime sludge will be excavated in bulk and visually monitored. The design will address excavation requirements, including lift thickness and proposed excavation limits.

The lime sludge is an OSDF Category 5 material, which requires that a Request For Disposal (RFD) form be submitted to the OSDF/EPA to allow for special placement. Special requirements for handling and placement of lime sludge in the OSDF are presented in the Impacted Materials Placement Plan (DOE 1998b). During design, investigations will be performed to assess and develop handling requirements.

Excavated impacted material that exceeds the radiological WAC of the OSDF will be segregated and transported to SP-7. "Special materials," as defined in the SEP, encountered during excavation will be placed in a Special Material Transfer Area at the project site. The Special Material Transfer Area will be established during the excavation phase of the project.

During excavation, the actual excavation limits will be surveyed in the field to verify that the design depths are achieved. Visual observation and real-time instrumentation will also be used to monitor the bottom of the excavation. Groundwater encountered during excavation will be collected and conveyed into the FEMP storm drain system located within the FPA and conveyed to the Storm Water Retention Basin (SWRB). After excavation, the LSPs will be converted to a WMF.

1.2.1.2 Conversion to Water Management Facility

After the LSPs have been excavated, they will be converted into a facility to collect and store water that may be encountered during excavation of the FPA. This facility will receive surface water and groundwater pumped from the active excavation. This water may be contaminated with Volatile Organic Compounds (VOCs) and/or radionuclides; therefore, a liner will be required. Various liner options will be evaluated during design. During excavation of the FPA, water will be collected in sumps and transferred by piping to the WMF, which will be part of a water management system designed to manage runoff for a quarter of the FPA (approximately 30 acres). During design, a determination will be made regarding the contribution that the LSPs will make to the system capacity.

During the conversion phase, a system will be installed to pump water to the Advanced Wastewater Treatment Facility (AWWT), via the Biodenitrification Surge Lagoon (BSL), or to the SWRB. There will be no provisions for segregating water in the WMF. Storm water that may be contaminated with VOC water will be managed as VOC contaminated water and pumped to the BSL; otherwise, it will be pumped to the SWRB. Classification of the water (VOC or non-VOC) will be made based on the area from which the water is pumped.

1.2.2 Water Management

During design, the A/E will develop a Water Management Plan (WMP). This WMP will address water handling during all phases of the LSP RA. It will present analysis, recommendations, and rationale for the proposed design. It will describe: 1) initial surface water management facilities that will be put in

place prior to actual excavation (site preparation), 2) water handling during excavation, and 3) anticipated operation of the WMF during remediation of the FPA. Removal of WMF components, certification, and final remediation of the LSPs will be performed after the WMF is no longer needed to support FPA remediation. Details to remove the WMF, certify and restore the area for final land use will be addressed in other design documents that are not within the scope of this DCP.

The WMP will summarize the analysis and evaluation that will be performed to develop the design.

The WMP will address both storm water and erosion and sediment control. Sediment storage capacity will be established for all sediment control facilities.

1.2.2.1 Initial Site Preparation

Prior to excavation of impacted material from the LSPs, both surface water diversion and water collection systems will be constructed and/or installed as well as erosion control measures. These systems will be evaluated and developed during design.

A diversion system will be designed to control surface water run-on. The existing berm at the perimeter of the LSPs generally prevents surface water from entering the LSPs. In some areas (north and west sides) there are ditches along the perimeter of the LSPs. During design, these ditches will be evaluated to ensure that surface water runoff is handled and diverted around the LSPs. No special diversion components are expected for the south and east sides of the LSPs. The K-65 trench is located to the south and the ground surface slopes away from the LSPs to the south. A paved road is located on the east side of the LSPs.

Runoff from the active excavation areas will be collected and controlled. During initial site preparation activities, prior to excavation, a system will be installed to collect and manage storm water. This will include a system or process to collect sediment-laden water from the active excavation area, with capacity to remove some of the sediments, and then convey the water to the SWRB.

During initial site preparation activities, prior to excavation, a system will be installed to collect and manage storm water. If possible, a gravity system will be developed.

1.2.2.2 Excavation Phase

During excavation, sediment controls will be provided to handle runoff from the active LSP excavation. Excavated areas within the LSPs may serve as collection sumps for this water. The sumps should provide initial sediment storage capacity. Additional sediment storage and storm water capacity will be provided in the SWRB. Water from the sumps will be pumped and conveyed to the SWRB via the existing storm drain system in the FPA. A pump system will be used to convey the water to the existing storm drain.

1.2.2.3 Conversion

After excavation is completed and precertification performed, the LSPs will be converted to a single WMF. This facility will handle storm water and VOC contaminated water from the FPA; these two types of water will not be mixed. Water from the FPA will be pumped to the WMF by temporary surface pipelines.

Non VOC-contaminated waters conveyed to the WMF will be transferred to the SWRB via the existing storm sewer drainage system in the FPA. VOC-contaminated water will be pumped from the WMF to the BSL for subsequent treatment in the Phase II unit of the AWWT. There will be no segregation capability in the WMF. If VOC contaminated water is in the WMF, then all water will be managed as VOC contaminated water until it is all removed. Water will be classified as VOC contaminated or non-VOC contaminated water based on the portion of the FPA being excavated. The potential quantity of VOC contaminated water to be collected from the FPA is unknown. However, the WMF will be designed to utilize the available volume from the LSPs after excavation. This capacity will be optimized with pumping and controls. The many related factors and issues will be analyzed and discussed in the WMP including:

- Capacity available (after removal of impacted material)
- Liner options for VOC water
- Piping routes to BSL
- Pump system to BSL
- Discharge system to SWRB
- Water discharge controls
- Dewatering capability
- Groundwater collection and handling
- Sediment removal.

1.2.3 Construction Support Facilities

During design, facilities and processes to support the LSP RA construction will also be addressed and designed as necessary. These facilities include:

- Construction trailers and lay down area
- Radiological controls and facilities
- Equipment wash facilities and procedures
- Utilities.

1.2.3.1 Construction Trailers and Laydown Area

Provisions will be made for the RA contractor to have office space to support construction; this may involve setting up a construction support trailer or utilizing existing FDF trailers. Laydown areas in the vicinity of the LSPs will also be identified to support construction. During design, an area or existing trailer will be designated for this function. If required, a source of electricity will also be designed to support any new trailer. Sanitary facilities will consist of portable toilets and hand wash facilities.

1.2.3.2 Radiological Controls and Facilities

The LSPs area is a designated radiological controlled area; radiological controls will be developed during design. An existing radiological control point will be used during the RA phase as the normal ingress and egress point for the LSPs and includes a personnel contamination monitor (PCM). If an additional support facility is necessary, it will include personal protective equipment (PPE) storage and change-out areas. The support facility may consist of a sea/land container or other temporary facility. Radiological control fencing will be addressed during design.

1.2.3.3 Equipment Wash Requirements

Haul vehicles will enter the Haul Road to transport LSP material to the OSDF and SP-7. Vehicles must be loaded in accordance with specific loading procedures to ensure they remain clean or washed before they will be permitted to enter the Haul Road. During design, options to load and wash vehicles will be developed and analyzed.

1.2.3.4 Utilities

As necessary, electric power and phone service will be provided for the LSP project. Phone service will be made available to the contractor construction trailer. Electrical power will be provided to the

LSPs for water management pumping, service to the new trailer and other loads. In the vicinity of the LSPs, a 13.2 kiloVolt (kV), 480V, 150 amp aerial circuit will be extended from Pole SW128 south along existing poles to provide local power for the required loads. A starter rack type service will be installed adjacent to the area of the dewatering pump. The pumps associated with the remediation will be 480 V, 3 phase with local starters.

1.2.4 Quantity and Cost Estimates

Quantity takeoffs and cost estimates will be developed for the design. The A/E will prepare the quantity takeoffs. FDF will prepare the cost estimates. The quantity estimates will be prepared in an FDF format and in accordance with FDF designated pay items.

1.2.5 Title III Engineering Services

Title III services will be provided by the A/E during the RA of the LSPs. These services include attendance at construction meetings, preparation of observation reports, and review of RA contractor submittals; including Vendor Data Submittals, Requests for Clarification of Information, and Design Change Notices.

1.3 ASSUMPTIONS

This DCP is based on the following assumptions:

- FDF will be responsible for compliance with storm water management and wetlands issues, including all National Pollutant Discharge Elimination System (NPDES) requirements and permits. FDF will provide guidance on storm water and wetland compliance.
- The Environmental Safety and Health and Training Requirements Matrix will be prepared by FDF.
- The RA contractor will develop Safe Work Plans for approval by FDF prior to performing the work.
- The RA contractor will excavate and manage impacted material as shown on the design documents.
- FDF will prepare and implement any sampling and analysis plans to characterize soil, guide excavation, and determine compliance with clean-up levels.
- Environmental and radiological monitoring will be provided by FDF in accordance with ARARs.

- To the extent practical, above-grade vegetation will be radiologically scanned, cut, chipped, and stockpiled as non-impacted material or, if impractical, blended with other impacted material within the LSPs.

- The personnel monitoring and radiological control requirements will be specified by FDF.

- The RA contractor may provide an office trailer. A pole will be designated for the power supply. In lieu of a contractor-provided trailer, FDF may elect to designate an existing facility for contractor use.

- If required, a radiological control point facility trailer must be set up in accordance with FDF requirements.

- All structures, systems, and components will be classified as Performance Grade 5.

- A perimeter drain or other system will be designed to control perched groundwater encountered during excavation.

1.4 PROJECT INTERFACES

The project requires interfacing with existing systems and procedures. The existing physical interfaces include:

- Site access and haul roads
- WAO and Waste Management
- Site utilities
- AWWT Facility and Water Projects
- OSDF
- SP-7 Stockpile
- Alternative remedial action subcontractor approach (ARASA).

1.4.1 Site Access and Haul Roads

A traffic plan shall be prepared with the design, indicating the locations and routes for access and haul roads to the RA contractor. This will include site access to the LSPs and haul routes to the OSDF as well as SP-7. Use of the Haul Road will be coordinated with the SWU contractor operations by FDF.

1.4.2 WAO and Waste Management

The FDF Waste Acceptance Organization (WAO) will monitor all excavations and determine if excavated material is acceptable for placement in the OSDF. Above-WAC material will be transported to SP-7 for off-site disposal. Special Materials encountered during excavation will be placed in the

Special Materials Transfer Area; FDF Waste Management will handle materials placed in the Special Materials Transfer Area.

1.4.3 Site Utilities

Site utilities such as electric power to the pumps will be designed based on electrical code requirements. The locations of existing utilities are available on FEMP grid utilities drawings, and will be shown on the construction drawings. The RA contractor will be alerted to their locations and required not to disturb them. Utility relocation will be avoided if possible.

1.4.4 AWWT Facility and Water Projects

During excavation of the LSPs, runoff from within the excavation will be pumped to the existing storm drain system which discharges to the SWRB. After excavation is complete and the excavation is converted to a WMF, water will be pumped to the facility from the FPA excavation. VOC-contaminated water from the excavation of the FPA will be routed through the BSL to the AWWT for Phase II treatment. Non VOC-contaminated waters will be discharged to the SWRB via the existing storm sewer system.

1.4.5 OSDF

The RA contractor will ensure that the impacted material being transported to the OSDF meets OSDF physical WAC including size and moisture content.

1.4.6 SP-7 Stockpile

Impacted materials above the OSDF radiological WAC will be transported to the SP-7 stockpile for subsequent off-site disposal. The design documents will present the RA contractor responsibilities, including unloading the impacted materials in a manner to prevent contamination of the vehicle tires and under carriages, and equipment wash requirements.

1.4.7 ARASA

An active railroad track (Track 13) along the western border of the LSPs is used by the ARASA contractor. Track operations are not to be disrupted.

1.5 REMEDIAL ACTION APPROACH AND SCHEDULE

Construction activities will be presented in a stand-alone RA bid package. The package will include all remedial activities from initial site preparation through excavation and conversion into a WMF. It will include storm water and erosion control measures, fugitive dust control, infrastructure improvements, clearing, excavation and hauling of impacted material, grading for conversion into a WMF, installation of water transfer system, liner installation, and all other activities necessary to remediate the LSPs and convert them into a WMF. The Title II design package will assume that this WMF will be formally turned over to the Aquifer Restoration Waste Water Project (ARWWP). Accordingly, the RA construction contractor will conduct a construction acceptance test under ARWWP supervision. The system operability test can be completed concurrently. The turnover and testing of the system will meet conduct of operations requirements. The actual RA activities are scheduled to be performed in Fiscal Year 2000.

2.0 DESIGN BASIS

2.1 FUNCTIONAL REQUIREMENTS

The functional requirements for the excavation and conversion of the LSPs are described in the Functional Requirements Document prepared by FDF for the LSP RA Project.

2.2 DESIGN CRITERIA

State and local building codes will be followed unless they conflict with DOE Order 6430.1A, in which case the most conservative will apply. Title II and III work will be performed in compliance with pertinent S/RIDs as identified in the FDF Policies and Requirements Manual. Pertinent S/RIDs for this project are in the following:

- S/RID No. 2, Engineering Design
- S/RID No. 3, Emergency Preparedness and Management
- S/RID No. 5, Environmental Protection
- S/RID No. 6, Fire Protection
- S/RID No. 8, Management Systems
- S/RID No. 9, Nuclear and Systems Safety
- S/RID No. 10, Occupational Safety and Health
- S/RID No. 12, Packaging and Transportation
- S/RID No. 14, Radiological Protection
- S/RID No. 15, Security
- S/RID No. 17, Environmental Restoration and Waste Management.

2.2.1 Regulations, Codes, Standards, Orders, Manuals, and Guides

This section presents the general regulations, codes, standards, and orders other than ARARs/TBCs that are to be followed for the LSP RA design. This information is organized by engineering discipline. Pertinent ARARs/TBCs developed by FDF are listed in Appendix A.

Civil - General

- American Association of State Highway and Transportation Officials (AASHTO), GDHS-90, "Policy on Geometric Design of Highways and Streets," 1990, by AASHTO

- American Society of Civil Engineers (ASCE), Manual 37, "Design and Construction of Sanitary and Storm Sewers," ASCE

- American Water Works Association (AWWA) C 906-90 Polyethylene Pressure Pipe and Fittings, 4 Inch through 63 Inch for Water Distribution

- AWWA, C 600-93 Installation of Ductile-Iron Water Mains and Their Appurtenances
- FEMP Stormwater Pollution Prevention Plan for Construction Activities
- Sitewide Excavation Plan
- North American Datum of 1983
- North American Vertical Datum of 1929
- Ohio Department of Transportation (ODOT), Location and Design Manual, Volume II, Drainage Design
- ODOT, Construction and Material Specifications, January 1997
- Ohio Department of Natural Resources (ODNR), "Rainwater and Land Development, Ohio's Standard for Stormwater Management, Land Development, and Urban Stream Protection," 2nd ed., 1996
- Soil Conservation Service (SCS), Soil Survey of Hamilton County, Ohio
- SCS, "TR-55 Urban Hydrology for Small Watersheds," Technical Release 55, SCS
- TM 5 814-2, "Sanitary and Industrial Wastewater Collection - Pumping Stations and Force Mains," U.S. Department of Army
- AASHTO HS-20, Traffic Loadings Across Force Mains.

Civil - Geotechnical

- American Society for Testing and Materials (ASTM) D2216, Laboratory Determination of Water (Moisture) Content of Soil and Rock
- ASTM D422, Standard Test Method for Particle-Size Analysis of Soils
- ASTM D413, Test Method to Determine Tensile Peel Strength of Geotextile to the Geonet
- ASTM D698, Laboratory Compaction Characteristics of Soil Using Standard Effort
- ASTM D1505 or D792, Test Method for Determining Density or Specific Gravity of a Polymer
- ASTM D1587, Practice for Thin-Walled Tube Sampling of Soils
- ASTM D2166, Test Method for Unconfined Compressive Strength of Cohesive Soils

- ASTM D2850, Test Method for Unconsolidated, Undrained Compressive Strength of Cohesive Soils in Triaxial Compression
- ASTM D4318, Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- ASTM D4439, Terminology for Geosynthetics
- ASTM D4533, Test Method for Trapezoidal Tearing Strength of Geotextile
- ASTM D4595, Test Method for Tensile Properties by the Wide Strip Method
- ASTM D4632, Test Method for Breaking Load and Elongation of Geotextiles Grad Method
- ASTM D4716(04.09), Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
- ASTM D4767, Test Method for Consolidated Undrained Triaxial Compression Tests on Cohesive Soils
- ASTM D5084, Measurement of Hydraulic Conductivity of Saturated Porous Material Using a Flexible Wall Permeameter
- ASTM D5101, Standard Test Method for Measuring the Soil Geotextile System Clogging Potential by the Gradient Ratio
- ASTM D5199, Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes
- ASTM D5321, Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic Friction by Direct Shear Method
- ASTM D5761, Test Method for Measuring Mass Per Unit Area of Geotextiles.

Cost Estimating

- FEMP PCS-002, Cost Estimating
- DOE Office of Infrastructure Acquisition (FM-50), "Cost Estimating Guide, Cost Guide, Volume 6."

Electrical

- American Bearing Manufacturers Association (ABMA) 9-90 Load Ratings and Fatigue Life for Ball Bearings
- ABMA 11-90 Load Ratings and Fatigue Life for Roller Bearings

- American National Standards Institute (ANSI) C80.1-90 Rigid Steel Conduit-Zinc Coated
- ANSI C2-97 National Electrical Safety Code
- ANSI C62.1-89 Gapped Silicon-Carbide Surge Arresters for AC Power Circuits
- ANSI C62.11-87 Metal-Oxide Surge Arresters for AC Power Circuits
- ANSI C82.4-85 Ballasts for High Intensity Discharge and Low Pressure Sodium Lamps (Multiple Supply Type)
- ANSI C135.1-79 Galvanized Steel Bolts and Nuts for Overhead Line Construction
- ANSI O5.1-92 Wood Poles Specifications and Dimensions
- American Society for Testing and Materials (ASTM) A36/A36M-96 Standard Specification for Carbon Structural Steel
- ASTM A475-95 Standard Specification for Zinc-Coated Steel Wire Strand
- ASTM A675/A675M Steel Bars, Carbon, Rev. A-90 Hot-Wrought, Special Quality, Mechanical Properties
- ASTM B231-90 Concentric-Lay- Stranded Aluminum 1350 Conductors
- ASTM B232-92 Standard Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Reinforced
- American Wood-Preservers Association (AWPA) C4-89 Poles - Pressure Process
- AWPA C25-89 Standard for the Preservative Treatment of Crossarms by the Pressure Process
- International Electrical Testing Association (NETA) NETA ATS-95 Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems
- Institute of Electrical and Electronics Engineers (IEEE) 48-90 Standard Test Procedures and Requirements for High-Voltage Alternating-Current Cable Terminations
- IEEE 112-91 Standard Test Procedure for Polyphase Induction Motors and Generators
- National Electrical Manufacturers Association (NEMA) AB 1-93 Molded Case Circuit Breakers and Molded Case Switches
- NEMA ICS 1-93 Industrial Control and Systems General Requirements

- NEMA ICS 2-93 Industrial Control and System Controllers, Contractors, and Overload Relays Rated Not More Than 2000 Volts AC or 750 Volts DC
- NEMA ICS 4-93 Industrial Control and Systems Terminal Blocks
- NEMA ICS 6-93 Industrial Control and Systems Enclosures
- NEMA LA 1-92 Surge Arresters
- NEMA MG 1-93 Motors and Generators
- NEMA MG 13-84 Frame Assignments for AC Integral-Horsepower Induction Motors
- NEMA OS 1-89 Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports
- NEMA PB 1-90 Panelboards
- NEMA PB 1.1-91 General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less
- NEMA ST 20-92 Dry Type Transformers for General Applications
- NEMA TC 3-90 PVC Fittings for Use with Rigid PVC Conduit and Tubing
- NEMA TC 6-90 PVC and ABS Plastic Utilities Duct for Underground Installation
- NEMA WC 7-88 Cross-Linked-Thermosetting Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
- NEMA WC 8-88 Ethylene-Propylene-Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
- NEMA WD 1-83 General Requirements for Wiring Devices
- NEMA WD 6-88 Wiring Devices - Dimensional Requirements
- NEMA 250-91 Enclosures for Electrical Equipment (1,000 Volts Maximum)
- National Fire Protection Association (NFPA) 70 National Electrical Code, 1999 Edition
- NFPA 101-94 Code for Safety to Life from Fire in Buildings and Structures
- Underwriters Laboratories, Inc. (UL) Electrical Construction Materials Directory-98
- UL 360-86 UL Standard for Safety Liquid-Tight Flexible Steel Conduit
- UL 486A-91 UL Standard for Safety Wire Connectors and Soldering Lugs for Use with Copper Conductors

- UL 510-94 UL Standard for Safety Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape
- UL 854-96 Service-Entrance Cables
- UL 870-95 UL Standard for Safety Wireways, Auxiliary Gutters, and Associated Fittings
- UL 467-93 UL Standard for Safety Grounding and Bonding Equipment
- UL 96-94 UL Standard for Safety Lightning Protection Components.

Environmental Safety and Health

- 29 Code of Federal Regulations (CFR) 1910, "Occupational Safety and Health Standards"
- 29 CFR 1926, "Safety and Health Regulations for Construction"
- 10 CFR 835, "Occupational Radiation Protection" (this is the promulgation of DOE Order 5480.11)
- DOE Order 440.1, "Worker Protection Management for DOE, Federal and Contractor Employees"
- DOE/EH-0256T, Radiological Control Manual
- DOE-EM-STD-5502-94, "Hazard Baseline Documentation"
- DOE-STD-1088-95, DOE Standard "Fire Protection for Relocatable Structures," June 1995
- Ohio Administrative Code (OAC) 3745-20-05, Standards for Asbestos Waste Handling.
- RM-0016, Management Plan FDF Policies and Requirements Manual
- RM-0020, Radiological Control Requirements Manual
- RM-0021, Safety Performance Requirements Manual.
- RM-0047, Fugitive Dust Control Requirements.

Mechanical

- American Society of Mechanical Engineers (ASME) B31.3, Chemical Plant and Refinery Piping

- American Society for Non-Destructive Testing (ASNT) SNT-TC-1A, Recommended Practices
- ASTM A36, Standard Specifications for Carbon Structural Steel
- ASTM A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
- ASTM A105/A105M Revision B, Standard Specification for Carbon Steel Forgings for Piping Applications
- ASTM A126, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
- ASTM A193, Standard Specification for Alloy-Steel and Stainless Steel Bolting Material for High Temperature Service
- ASTM A194, Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
- ASTM C552, Standard Specification for Cellular Glass Thermal Insulation
- American Welding Society D1.1, Structural Welding Code, Steel
- Manufacturers Standardization Society (MSS) SP-58, Pipe Hangers and Support-Materials, Design, and Manufacture
- MSS SP-69, Pipe Hangers and Support-Selection and Application
- MSS SP-89, Pipe Hangers and Support-Fabrication and Installation Practices
- Ohio Plumbing Code, 1995.

2.3 DISCIPLINE CRITERIA

2.3.1 Civil Design

General civil and geotechnical design is required to support site preparation activities, excavation of impacted material, and water management.

Dust control will be required for all field activities. Dust control procedures will be provided by the contractor per FEMP requirements. Air particulate emission requirements are listed in the ARARs in Appendix A. The contractor will apply water or a dust suppressant using tanks with a suitable sprinkling device to control dust within the project area during all activities involving the potential for generating airborne emissions.

Existing utilities and other features will be shown on the construction drawings and the contractor will be warned to avoid impacting them. The locations of existing utilities are available on FEMP Utilities Grids 24 and 25. Major utilities include the an underground electric line to the east, the sludge influent line, a 3-inch sanitary line to the northwest, a high pressure fire protection line, and a 10-inch storm drain running north-south on the east side of the east road, and the K-65 trench on the south side.

Site Preparation

The excavation area will require a radiological control point to support the construction activities; this function will be provided by an existing facility. The contractor may provide a construction trailer; electrical power will be provided by FDF as part of this design. The locations of the access points, trailers, utilities, initial water handling facilities, access controls, a Special Materials Transfer Area, and security issues will be addressed as part of site preparation activities.

Excavation

The nature, level, and extent of contamination and the clean-up levels defined in the OU2 ROD provide the basis for establishing the extent, boundaries, and approach for the excavation required for the design. Data regarding the nature, level, and extent of radiological contamination at the OU2 Waste Units is summarized in the Remedial Investigation Report for Operable Unit 2 (DOE 1995b), the Feasibility Study Report for Operable Unit 2 (DOE 1995c), and in associated electronic data bases maintained and provided by FDF.

Trees, bushes, and high grass will be removed from the LSPs prior to excavation. To the extent practical, the vegetation will be radiologically scanned, chipped and treated as non-impacted material or, if impractical, it may be blended with other impacted material within the LSPs. If identified prior to excavation, above-WAC material will be excavated first, followed by impacted material that meets the OSDF WAC. Pockets of impacted material exceeding the radiological WAC will be excavated and transported to SP-7, special materials will be placed in the Special Materials Transfer Area, and all other impacted material will be transported to the OSDF. The excavation areas will serve as the initial sumps for storm water and sediment control.

Excavation will be performed to remove all lime sludge and impacted material and to produce stable slopes. Maximum slopes during excavation will be determined by slope stability calculations during

design and may be exceeded only with the approval of the FDF Construction Manager. Generally, the maximum (steepest) slope after final grading shall be 2 horizontal to 1 vertical. Flatter slopes shall be used where feasible to provide a slope that is easier to maintain. Once final excavation has occurred, the LSPs will be converted to a WMF.

Water Management

One of the major design issues is how water will be managed during and after construction. Storm water run-on will be minimized to the extent practical. This will be accomplished primarily by diversion ditches and similar drainage controls at the perimeter of the LSPs. Storm water controls will focus on preventing run-on from adjacent areas and preventing runoff from the excavation reaching existing drainage systems. Other perimeter erosion and sediment control measures will be used to control erosion and limit sediment from leaving the work area. Sediment and erosion control measures will follow Ohio Department of Natural Resources (ODNR), Ohio Department of Transportation (ODOT), Natural Resources Conservation Service (NRCS), and FEMP standards. Runoff controls will be designed consistent with the ODNR "Rainwater and Land Development Manual." Overall surface water management, including all storm water controls, will be described in the WMP.

The design will also address how the facility will be used to manage water generated during excavation of the FPA. The design for the converted LSP will address:

- Pumping water to the BSL
- Pumping water to the SWRB
- Liner systems
- Perched groundwater
- Perimeter drain requirements.

Geotechnical

Geotechnical data that provide the basis for the remedial design are summarized in the OU2 remedial investigation/feasibility study documents and the Geotechnical Summary Report. The emphasis of geotechnical design will relate to support for excavation planning and/or trench design, slope drainage and slope stability analyses.

An Intergraph Geologic Information System computer platform will be used to assist in developing the civil excavation plan. The platform will be used to evaluate contaminant data provided by FDF. Slope

stability analyses will consider veneer (e.g., at interface with geonet, geotextile, and/or geomembrane) and mass stability type failure (translation of waste or embankment soil laterally). The UTEXAS3 slope stability software will consider geosynthetic and soil interventions. The slope stability analyses will consider temporary slopes during excavation and permanent slopes established in the final grading plan. In addition, slope stability analyses will evaluate the resistance to sliding of the geonets, geotextiles, and geomembranes of other materials on the faces of the slope.

2.3.1.1 Civil Design Drawings

A preliminary list of civil design drawings include:

- Project Title Sheet
- Drawing Index
- Legend and General Notes
- Existing Conditions Plan
- Site Preparation Plan
- Excavation Plan
- WMF Plan
- Traffic Plan
- Cross-sections.

2.3.1.2 Civil Calculations

Calculations for the following design components will be prepared:

- Earthwork
- Storm water (run-on and runoff) management
- Storm drainage
- Slope stability
- Groundwater collection.

2.3.2 Electrical Design

Electrical power will be provided to the support area and pump stations. Three-phase power will be obtained from an existing substation and routed to the support area and lift station via an overhead electrical distribution system supported by wood poles, crossarms and porcelain type insulators. If required, step-down transformers shall be rack-mounted.

Electrical heat tracing and/or insulation is not anticipated to be required for this project. Water lines will either be installed below frost depth or drained during operation when freezing conditions are expected.

2.3.2.1 Electrical Design Drawings and Specifications

A preliminary list of electrical design drawings and specifications are as follows:

- Dry Type Transformer/Panel Boards
- Overall Site Power Plan
- Single Line Diagrams
- Elementary Diagrams
- Basic Electrical Materials and Methods
- Underground Duct Banks
- Overhead Power Distribution
- Panel Schedule and Details
- Grounding and Bonding.

2.3.3 Mechanical Design

A mechanical system of pumps will be used to transfer water from the WMF to the BSL and the FEMP storm drain system. A pump for the groundwater management system (perimeter drain) may also be required. Storage and transfer systems shall meet the requirements of DOE Order 6430.1A. Design shall emphasize the control and containment of the water being transferred.

The WMF lift station will be equipped with a submersible pump on a guide system to minimize the need to enter the lift station. A check valve will be used to prevent backflow through the pump. Fill controls will regulate the pump operation. Mechanical engineering will be responsible for the specifications of pumps, above-ground pipe, pipe supports, and insulation. The lift station discharge will incorporate flow measuring devices and totalizers to monitor discharge flows. Appropriate isolation and bypass valves and piping will also be installed. The transfer piping to the appropriate treatment facility will be via an existing 6" line in the K-65 trench. This line will be tested by FDF prior to contract award.

Existing and/or similar equipment from the Southern Waste Units retention basin will be considered and used to the extent practical.

Corrosion, abrasion resistance, and ease of decontamination will be considered when selecting pipe, fittings, valves, and equipment items.

Equipment

Pumps shall be provided to transfer water from the WMF to the BSL and from the WMF to the FEMP storm drain. A pump may also be used to transfer water collected in the groundwater management system. Pump material shall be in accordance with ASTM A48 and A276.

Water Transfer Piping

Generally, high-density polyethylene (HDPE) pipe and carbon steel will be used for water transfer piping. Transfer piping will be tested in accordance with applicable industry and FEMP standards. Other types of pipe may be used for valves and connections to existing pipes. Piping shall be in accordance with ASTM D3350 and F714 standards.

Pipe Supports

Pipe hanger material, design, manufacture, selection, application, fabrication, and installation will be in accordance with MSS SP-58, SP-69, and SP-89. Auxiliary steel supports will be in accordance with ASTM A-36 and A-576.

Welding/Joining

Welding will be in accordance with ASME B31.3 and American Welding Society D1.1. HDPE pipe material will be joined/fused per manufacturer's instructions.

2.3.3.1 Mechanical Drawings and Specifications

A preliminary list of mechanical design drawings is as follows:

- Piping and Instrument Drawing (P&ID) - Symbols and Legend Sheet
- P&ID - Wastewater Collection and Transfer.

A preliminary list of specifications is as follows:

- Piping, Fittings, Valves, and Accessories
- Piping Supports and Anchors
- Lift Station Pumps
- Motors.

2.3.3.2 Mechanical Calculations

The following will be required:

- Pipeline sizing and/or analysis
- Pump sizing.

2.3.4 Environmental Safety and Health Requirements

FDF will address the requirements for worker health and safety, radiation exposure control, and other regulatory requirements. All of the requirements provided are derived from pertinent S/RIDs identified in the RM-0016, Management Plan and the FDF Policies and Requirements Manual. This section addresses some of the general requirements that will be considered during design.

LSP excavation activities will take place in contaminated areas; therefore, workers shall be required to have Hazardous Waste Operations and Emergency Response training in accordance with 29 CFR 1926.65.

Site clearing activities shall be done in accordance with 29 CFR 1926.604. Equipment used in site clearing activities shall also meet this requirement.

Material handling equipment shall meet the requirements of 29 CFR 1926.602. These requirements address seat belts, brakes, rollover protection, audible alarms, and scissor points.

Workers may be required to enter excavated trenches to relocate or remove utilities. This type of work will be minimized to the extent possible. Excavations shall be maintained in accordance with 29 CFR 1926, Subpart P.

Measures shall be identified and implemented which comply with American Conference of Governmental Industrial Hygienists and FDF requirements to prevent heat stress during warm weather. Heat stress hazards are more serious for activities where special protective clothing and equipment are required.

Valves, switches, and like devices shall be designed to accept a FDF Facility Owner's lock shank to provide a means for energy control. Appropriate isolation and bypass valves and piping will also be provided at in-line instrumentation.

The radiological chemical control and PPE requirements (including respiratory protection requirements) will be specified in the RA contractor's Safe Work Plan and FDF work permits.

REFERENCES

U.S. Department of Energy, 1987/1992. DOE Order 4700.1, "Project Management System."

U.S. Department of Energy, 1989. DOE Order 6430.1A, "General Design Criteria."

U.S. Department of Energy, 1995a, "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, 1995b, "Remedial Investigation Report for Operable Unit 2," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1995c, "Feasibility Study Report for Operable Unit 2," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

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

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

U.S. Environmental Protection Agency, 1990, "Interim Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties," OSWER Directive 9355.5-01.

U.S.D.A. Soil Conservation Service (SCS), 1982, "Soil Survey of Hamilton County, Ohio."

APPENDIX A

ARARs AND TBCs FOR LSP AREA

GROUPINGS OF ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSP)

Presentation Group	Topical Subdivision(s)	Page
Natural and Cultural Resources	Threatened and Endangered Species Protection	A-4
	Archeological, Historic, and Cultural Resource Protection	A-4
Air Pathway	Noise Pollution Control	A-9
	Air Emissions	A-9
Surface Water Pathway	Wetlands/Floodplain Protection	A-19
	Discharge to Surface Water	A-26
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	Wells - Construction	A-30
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Soil Remediation	Closure of Hazardous Waste Management Units	A-32
	Radionuclide Concentrations	A-36
	Lead Concentration	A-39
	PCB Concentration	A-39
	Certification of Cleanup	A-40
Impacted Material Management	Definitions and General Facility Standards	A-42
	Management of Low-level Radioactive Waste Material	A-58
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Post-Closure	Description of Post-closure Care	A-67

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Presentation Group	Topical Subdivision(s)	Page
	Modifications to Post-closure Care Plan or Period	A-69
	Property Use Restrictions	A-69
	Post-closure Notice/Survey Plat	A-71
	Deed Notation	A-71

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PERTINENT ARARs AND TBCs FOR REMEDIATION LIME SLUDGE PONDS (LSP)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
NATURAL & CULTURAL RESOURCES						
THREATENED & ENDANGERED SPECIES PROTECTION						
Procedures for Implementing the National Environmental Policy Act 40 CFR §6.302(h) 10 CFR Part 1021 Endangered Species Act 16 U.S.C. §1531, et seq. Endangered and Threatened Wildlife and Plants 50 CFR §17.21, §17.31, §17.61, §17.71, and §17.94 Interagency Cooperation-Endangered Species Act 50 CFR §402.01	All federal agencies must ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of the constituent elements essential to the conservation of a listed species within a defined critical habitat. Additional requirements apply if it is determined that a proposed activity could adversely affect these species or their habitat.	Appl	Appl	Appl	Findings of 1993-94 updated surveys at the FEMP property: • Populations of the state-listed threatened Sloan's crayfish (*Orconectes sloanii*) are located in sections of Paddy's Run. • Good habitat for the federally-listed endangered Indiana bat (*Myotis sodalis*) exists along Paddy's Run and the storm sewer outfall ditch. • Suitable habitat exists in limited areas for the federally-listed endangered running buffalo clover (*Trifolium stoloniferum*), and only in the northern woodlot for the state-listed threatened spring corralroot (*Corallorhiza wisteriana*). • Marginal habitat for the state-listed endangered cave salamander (*Eurycea lucifuga*) exists in a very limited single area. • Neither habitat nor populations were located for the state-listed endangered mountain bindweed (*Polygonum cilinode*) and slender fingergrass (*Digitaria filiformis*).	Addressed in Section 5.1 of the Sitewide Excavation Plan, and will be addressed in the IEMP's Natural Resource Impact Monitoring Plan (NRIMP); however, DOE does not expect to encounter any federal- or state-listed threatened or endangered species or critical habitat in the Remediation Area 1 Phase 2 areas to be addressed by this remediation project; no additional surveys conducted or planned.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
THREATENED & ENDANGERED SPECIES PROTECTION, continued						
Interagency Cooperation-Endangered Species Act 50 CFR §402.12(a), (b)	A biological assessment shall evaluate the potential effects of the action on listed and proposed critical habitat and determine whether any such species or habitat are likely to be adversely affected by the action and is used in determining whether formal consultation or a conference is necessary. These procedures are required for federal actions that are "major construction activities."	Appl	Appl	Appl	No critical habitat is present on the Fernald property. Updated surveys of the FEMP property in 1993 found marginal habitat for the state-listed endangered cave salamander (*Eurycea lucifuga*) exists in a very limited single area.	See preceding.
Endangered Species Regulations ORC 1531.25	No person shall take or possess any native species of wild animal, or any eggs or offspring thereof, that is endangered with state-wide extinction.	Appl	Appl	Appl	Updated surveys of the FEMP property in 1993-94 found populations of the state-listed threatened Sloan's crayfish (*Orconectes sloanii*) in sections of Paddy's Run.	See preceding.
Endangered Species Regulations ORC 1518.02 OAC 1501:18-1	No person shall root-up, injure, destroy, remove, or carry away on or from public highways, public property, or waters of the state, or on or from the property of another, without the written permission of the owner, lessee, or other person entitled to possession, any endangered plant listed in OAC 1501:18-1.	Appl	Appl	Appl	Surveys of the FEMP property in 1994 did not locate populations of the following plants: the federal-listed endangered running buffalo clover (*Trifolium stoloniferum*); the state-listed endangered mountain bindweed (*Polygonum cilinode*) and slender fingergrass (*Digitaria filiformis*); and the state-listed threatened spring corralroot (*Corallorhiza wisteriana*).	See preceding.
ARCHAEOLOGICAL, HISTORIC AND CULTURAL RESOURCE PROTECTION						
Antiquities Act of 1906 16 U.S.C. §431	No person may appropriate, excavate, injure, or destroy any historic or prehistoric ruin or monument, or any object of antiquity situated or controlled by the Government of the United States without an applicable permit. Identification and preservation of cultural resources on federal lands is required, including natural landmarks.	Appl	Appl	Appl	Proposed areas of disturbance will be surveyed and consultation will occur between DOE, the Advisory Council on Historic Preservation and the State of Ohio Historic Preservation Office (OHPO) as agreed upon in the Programmatic Agreements (later entries).	Section F.4.2 of the Sitewide Excavation Plan
Historic Sites Preservation Act 16 U.S.C. §461-467		√	Appl	Appl		
ARCHAEOLOGICAL, HISTORIC AND CULTURAL RESOURCE PROTECTION, continued						

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Archaeological Resources Protection Act 16 U.S.C. § 470aa-470ll Procedures for Implementing the National Environmental Policy Act 40 CFR §6.301(c) Protection of Archaeological Resources 43 CFR §7.4(a)	Whenever any Federal agency finds, or is notified, in writing, by an appropriate historical or archaeological authority, that its activities in connection with any Federal construction project or federally licensed project, activity, or program may cause irreparable loss or destruction of significant scientific prehistorical, historical, or archaeological data, such agency shall notify the Secretary of the Interior, in writing, and shall provide the Secretary with appropriate information concerning the project, program, or activity. No person may excavate, remove, damage, or otherwise alter or deface or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands unless such activity is pursuant to a permit. If an EPA activity may cause irreparable loss or destruction of significant scientific, prehistoric, historic, or archaeological data, the responsible official or the Secretary of the Interior is authorized to undertake data recovery and preservation activities.	Appl	Appl	Appl	See preceding.	See preceding.
National Historic Preservation Act (NHPA) 16 U.S.C. §470 Protection of Historic Properties 36 CFR Part 800 Procedures for Implementing the National Environmental Policy Act 40 CFR §6.301(a), (b)	A federal agency (DOE) must take into account the effect of an undertaking on historic properties and accord the Advisory Council on Historic Preservation a reasonable opportunity to comment. Historic properties are defined as any prehistoric or historic district, building, site, structure, or object included in or eligible for inclusion in the National Register of Historic Places. This term includes artifacts, records, and persons released to and located within such properties. Historic properties that are to be substantially altered or demolished must be recorded for future use and reference. The purpose of this Act is not only to protect those properties listed in or eligible for the National Register of Historic Places, but also those properties that have not been listed or formally determined eligible for the listings. The heads of all Federal agencies shall assume responsibility for the preservation of historic properties which are owned or controlled by such agency. Prior to any Federal undertaking which may directly and adversely affect any National Historic Landmark, the head of the responsible agency shall, to the extent possible, minimize the harm to such landmark.	Appl	Appl	Appl	See preceding.	See preceding.
Archaeological and Historic Preservation Act 16 U.S.C. §469	Upon discovery that a project may cause the irreparable loss, destruction, significant scientific finding, prehistorical finding, or loss of historical or archaeological data, DOE must notify the Dept. of the Interior in writing and provide appropriate information concerning the project. DOE must, with possible assistance from the OHPO, undertake recovery, protection, and preservation of the data.	√	Appl	Appl	See preceding.	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
ARCHAEOLOGICAL, HISTORIC AND CULTURAL RESOURCE PROTECTION, continued						
Executive Order 11593, Protection and Enhancement of Cultural Environment 3 CFR Part 54	An inventory of a site with potential historic places is required for eligibility in the National Register of Historic Places.	√	Appl	Appl	See preceding and following entries.	See preceding.
Programmatic Agreement Regarding Disposition of Facilities under the Operable Unit 3 Record of Decision for Interim Remedial Action at the Fernald Environmental Management Project (January 16, 1996)	• Prepare a report package describing the primary buildings and structures at the FEMP, using existing information to provide information regarding construction details, production process descriptions, design changes, current structural conditions, and current use. The report package is to include written descriptions, photographs, representative engineering drawings, and videotape, as appropriate. If existing documentation is not adequate, additional documentation will be obtained (i.e., additional photographs). Representative support buildings and structures are to be documented with photographs and written summaries as well. • Prepare a separate report package describing the FEMP's role in the DOE weapons complex and the significance of the FEMP contribution to the U.S. defense.		√	√	Draft reports have been submitted to the Ohio Historic Preservation Office (OHPO). Once finalized, both documents will be available to the public in the Public Environmental Information Center and archived as appropriate.	See preceding.
ARCHAEOLOGICAL, HISTORIC AND CULTURAL RESOURCE PROTECTION, continued						

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Programmatic Agreement Regarding Archaeological Investigations at the Fernald Environmental Management Project (March 6, 1997)	Annual report packages, the first of which must be submitted on July 1,1997, must be submitted to the Ohio Historic Preservation Office (OHPO) and the Advisory Council on Historic Preservation (the Advisory Council) containing the following information: 1 list of all response actions and associated activities initiated within the year reported on; 2. map showing locations of above response actions/ associated activities; 3. list of response actions/associated activities conducted in previously surveyed (archeological survey) areas; 4. a list of surveys which identified no eligible historic properties; 5. a list of eligible historic properties that were avoided when implementing response actions and/or associated activities; 6. a list of Phase I-III reports generated; and 7. a map of locations of areas identified in item 6 and all properties identified. DOE-FEMP must also submit any and all Phase I reports generated within the last year, and not previously submitted, with the annual report. By September 2, 1997 (within 180 days of the signing of the Programmatic Agreement), submit to the OHPO and the Advisory Council a literature search, examination of aerial photographs, and use of a predictive model for all disturbed and/or contaminated areas of the FEMP (as defined in the Agreement). The predictive model is to utilize existing archeological data from the FEMP and surrounding area to determine the likelihood of additional archeological sites within the contaminated/disturbed areas and the spatial distribution, physical characteristics, and uses.	√	√	√	All of Remediation Area 1 Phase 2 has been surveyed in accordance with this programmatic agreement. All potential historic properties discovered have undergone data recovery after consultation with the OHPO and the Advisory Council. Unexpected discoveries will be addressed accordingly (see Section F.4.2 of the SEP). Draft reports are under preparation for submission to the OHPO and the Advisory Council. Once finalized, the reports will be available to the public in the Public Environmental Information Center and archived as appropriate.	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
ARCHAEOLOGICAL, HISTORIC AND CULTURAL RESOURCE PROTECTION, continued						
Native American Graves Protection and Repatriation Act 25 U.S.C. §3001 et seq.	Identification and preservation of cultural resources on federal lands is required, including natural landmarks. DOE must consult with appropriate Indian tribes before the intentional excavation or removal after an inadvertent discovery of Native American cultural items including human remains and objects of cultural significance.	Appl	Appl	Appl	DOE will consult with likely culturally affiliated tribes to determine the excavation, treatment, analysis and preparation of any extra reviews, associated funerary objects, unassociated funerary objects, sacred objects, or objects of cultural patrimony. Consultation will be coordinated with NHPA compliance when possible.	See preceding.
43 CFR Part 10	Provides for the return of human remains and cultural objects from Native American graves to affiliated tribes.	Appl	√	√		
American Indian Religious Freedom Act 42 U.S.C. §1996	Provides for tribal access by native peoples to grave sites and sites of cultural, symbolic, or religious significance.	Appl	Appl	Appl	See preceding.	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
AIR PATHWAY						
NOISE POLLUTION CONTROL						
Noise Control Act, as amended 42 U.S.C. §4901, *et seq.* Noise Pollution and Abatement Act 42 U.S.C. §7641	The public must be protected from noises that jeopardize health and welfare.	Appl	Appl	R&A	Appropriate engineering controls and best management practices will be implemented so that nuisance noise from vehicles and equipment will be reduced to the maximum practicable extent during conduct of the actions.	Section 5.1.2.1 of the Sitewide Excavation Plan
AIR EMISSIONS						
Solid Waste and Infectious Waste Regulations, Authorized, Limited, and Prohibited Solid Waste Disposal Methods OAC 3745-27-05 ORC 3734.03	Open dumping of solid waste is prohibited [OAC 3745-27-05(C)]. Solid waste disposal by means of open burning, as defined in OAC 3745-19, is permitted only as provided therein [OAC 3745-27-05(B)].	Appl	Appl	Appl		Addressed through the description of the selected remedy in the OU2 ROD (Section 9.0), OU5 ROD (Section 9.0), and OU3 ROD (Section 8.0)
Criteria for Classification of Solid Waste Disposal Facilities and Practices, Air 40 CFR §257.3-7]	Open burning of residential, commercial, institutional or industrial solid waste is prohibited. This requirement does not apply to infrequent burning of agricultural wastes in the field, silvicultural wastes for forest management purposes, land-clearing debris, diseased trees, debris from emergency clean-up operations, and ordnance [40 CFR §257.3-7].	√	√	Appl		

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Open Burning Standards, Open Burning in Unrestricted Areas OAC 3745-19-04(C)	Open burning is allowed for the following purposes [OAC 3745-19-04(C)]: • Recognized horticultural, silvicultural, range, or wildlife management practices [OAC 3745-19-04(C)(5)]. • Disposal of land clearing waste if the following conditions are met [OAC 3745-19-04(C)(4)]: - The fire is set only when atmospheric conditions will readily dissipate contaminants; - The fire does not create a visibility hazard on roadways, railroad tracks, or air fields; - The fire is located at a point on the premises no less than 1000 feet from any inhabited building not located on said premises.	√	√	Appl		

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
General Provisions on Air Pollution Control, Air Pollution Nuisances Prohibited OAC 3745-15-07	Measures shall be taken to adopt and maintain a program for the prevention, control, and abatement of air pollution in order to protect and enhance the quality of the state's air resource so as to promote the public health, welfare, and economic vitality of the people of the state.	Appl	Appl	Appl	Only fugitive dust (dirt, flyash, bottom ash) is anticipated from this soil remedial action project.	FEMP Fugitive Dust Control BAT Determination, Fugitive Dust Control Requirements (RM-0047), and Section 5.1.2 of the Sitewide Excavation Plan
ORC 3704.01-.05	The emission or escape into open air from any source whatsoever of smoke, ashes, dust, dirt, grime, acids, fumes, gases, vapors, odors and combinations of the above in such a manner or in such amounts as to endanger the health, safety, and welfare of the public, or to cause unreasonable injury or damage to property shall be declared to be a public nuisance. It is unlawful for any person to cause, permit, or maintain any such public nuisance.				Air pollution nuisance prohibitions will be met by employing best management practices for control of fugitive dust.	
ORC 3734.02(I)	No owner or operator of a hazardous waste facility, in the operation of the facility, shall cause, permit, or allow the emission therefrom of any particulate matter, dust, fumes, gas, mist, smoke, vapor, or odorous substances that, in the opinion of the Director [of Environmental Protection, a.k.a., the Director of the OEPA], unreasonably interferes with comfortable enjoyment of life or property by persons living or working in the vicinity of the facility, or that is injurious to public health. Any such action is hereby declared to be a public nuisance.	√	√	R&A		
Particulate Matter Standards, Non-Degradation Policy OAC 3745-17-05	The significant and avoidable deterioration of air quality in any part of the area where presently existing air quality is better than the particulate ambient air quality standards in OAC 3745-17-02 (described above) shall be prohibited.	Appl	Appl	√	Appropriate control measures will be applied to all construction grading, excavation, loading/unloading and material management activities to reduce fugitive emissions. Also see preceding entry.	FEMP Fugitive Dust Control BAT Determination, Fugitive Dust Control Requirements (RM-0047), and Section 5.1.2.2 of the Sitewide Excavation Plan
Particulate Matter Standards, Control of Visible Particulate Emissions from Stationary Sources OAC 3745-17-07(A)(1)(a)	Visible particulate emissions from any point source shall not exceed 20 percent opacity, as a six-minute average, but shall not exceed 60 percent opacity, as a six-minute average, at any time. Transient exceedance limits are included in this regulation.	Appl	Appl	Appl	All point sources associated with a remedial action project (i.e., sludge dewatering, etc.) will employ best available emissions control technologies to mitigate particulate emissions.	As necessary, monitoring requirements will be addressed in the appropriate IRDP.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
Particulate Matter Standards, Control of Visible Particulate Emissions from Stationary Sources OAC 3745-17-07(B)(1)	Visible particulate emissions from any fugitive dust source shall not exceed 20 percent opacity, as a three-minute average.	√	√	√	Appropriate control measures will be applied to all construction grading, excavation, loading/unloading and material management activities to reduce fugitive emissions.	See preceding.
Particulate Matter Standards, Control of Visible Particulate Emissions from Stationary Sources OAC 3745-17-07 (B)(4), (5), (6)	There shall be no visible particulate emissions from any paved roadway or paved parking area except for a period of time not to exceed six minutes during any 60-minute observation period. There shall be no visible particulate emissions from any unpaved roadway or unpaved parking area except for a period of time not to exceed 13 minutes during any 60-minute observation period. There shall be no visible particulate emissions from any material storage piles except for a period of time not to exceed 13 minutes during any 60-minute observation period.	Appl	R&A	√	Appropriate control measures will be applied to all construction grading, excavation, loading/unloading and material management activities to reduce fugitive emissions.	FEMP Fugitive Dust Control BAT Determination, Fugitive Dust Control Requirements (RM-0047), and Section 5.1.2.2 of the Sitewide Excavation Plan
Particulate Matter Standards, Restriction of Emission of Fugitive Dust OAC 3745-17-08(B)	No person shall cause or permit any fugitive dust source to be operated; or any materials to be handled, transported, or stored; or a building (or its appurtenances) or a road to be used, constructed, altered, repaired, or demolished without taking or installing reasonably available control measures to prevent fugitive dust from becoming airborne. Such reasonably available control measures shall include, but are not limited to, one or more of the following which are appropriate to minimize or eliminate visible particulate emissions of fugitive dust. • The use of water or other suitable dust suppression chemicals for the control of fugitive dust from the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land; or • The periodic application of asphalt, oil, water, or other suitable dust suppression chemicals on dirt or gravel roads and parking lots, and any other surfaces that may cause emissions of fugitive dust.	Appl	R&A	Appl	This requirement is applicable only to certain cities in Butler and Hamilton Counties. Appropriate control measures will be applied to all construction grading, excavation, loading/unloading and material management activities to reduce fugitive emissions.	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
Particulate Matter Standards, Restrictions on Particulate Emissions from Industrial Processes OAC 3745-17-11	The following are restrictions for particulates from any operation, process, or activity which releases or may release particulate emissions into the ambient air. These limits are based on the weight of material being processed. Process Weight at Maximum Capacity (lb/hr) — Allowable Particulate Emission Rate (lb/hr) 100 — 0.551 200 — 0.877 400 — 1.40 600 — 1.83 800 — 2.22 1000 — 2.58 *These limits do not apply to generation of fugitive dust* subject to OAC 3745-17-08 (listed above).	Appl		R&A	All point sources associated with a remedial action project (i.e., sludge dewatering, etc.) will employ best available emissions control technologies to mitigate particulate emissions.	See preceding.
Permit to Install New Sources of Pollution OAC 3745-31-05 (A)(3)	The installation or modification and operation of an air contaminant source, solid waste disposal facility, water pollution source, disposal system, land application of sludge, or public water system, must employ the best available technology. The terms used in the above are defined in OAC 3745-15-01, unless otherwise defined in OAC 3745-31-01.	R&A	Appl	R&A	Appropriate control measures will be applied to all construction grading, excavation, loading/unloading and material management activities to reduce fugitive emissions. All point sources associated with a remedial action project (i.e., sludge dewatering, etc.) will employ best available emissions control technologies to mitigate particulate emissions.	FEMP Fugitive Dust Control BAT Determination, Fugitive Dust Control Requirements (RM-0047), and Section 5.1.2.2 of the Sitewide Excavation Plan

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
Standards of Performance for New Stationary Sources, Subpart OOO—Standards of Performance for Nonmetallic Mineral Processing Plants 40 CFR §60.672(a), (d), (e)	No owner or operator shall cause to be discharged into the atmosphere from a crusher any emissions which: • Contain particulate matter in excess of 0.05 grams per dry cubic meter at standard conditions (g/dscm); and • Exhibit greater than 7 percent opacity Truck dumping of nonmetallic minerals into any crusher is exempt from these requirements.	R&A	√		It is not anticipated that a crusher will be used during this remedial action project. All point sources associated with a remedial action project (i.e., sludge dewatering, etc.) will employ best available emissions control technologies to mitigate particulate emissions.	See preceding.
40 CFR Part 61, Subpart M-National Emission Standard for Asbestos, Standard for Waste Disposal for Manufacturing, Fabrication, Demolition, Renovation, and Spraying Operation 40 CFR §61.150	(a) Discharge no visible emissions to the outside air during the collection, processing, packaging, or transporting of any asbestos-containing waste material, or use one of the emission control methods specified in paragraphs (a)(1) through (4) of this section: (1) Adequately wet asbestos-containing material. After wetting, seal all asbestos-containing waste material in leak-tight containers while wet; or, put materials that will not fit into containers without additional breaking into leak-tight wrapping. Label the containers or wrapped materials in accordance with 29 CFR 1910.1001(j)(2) or 1926.58(k)(2)(iii). (4) Use an alternative emission control and waste treatment method that has received prior approval from the Administrator. (5) As applied to demolition and renovation, the requirements above under paragraph (a) of this section do not apply to Category I non-friable ACM waste and Category II non-friable ACM waste that did not become crumbled, pulverized, or reduced to powder.	√	√	Appl		See preceding, and following sections of the Sitewide Excavation Plan: 2.5.8 Special Materials 3.3.2.2 Special Materials F.4.1.1 Asbestos

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
Asbestos Emission Control, Standard for Active Asbestos Disposal Sites OAC 3745-20-06(A)&(B) [40 CFR Part 61, Subpart M-National Emission Standard for Asbestos, Standard for Active Waste Disposal Sites, 40 CFR §61.154]	(A) Each owner or operator of an active asbestos waste disposal site shall cause or permit no visible emissions [of asbestos] to the outside air; or shall comply with the requirements of paragraph (B) of this rule. (B) Rather than meet the no visible emissions requirement of paragraph (A) of this rule, each owner or operator of an active asbestos waste disposal site shall comply with the following: (1) There shall be no visible emissions from asbestos-containing waste materials during the on-site transportation, transfer, deposition or compacting operations. (2) Deposition and burial operations shall be conducted in a manner which prevents handling by equipment or persons that causes asbestos-containing waste materials to be broken-up or dispersed before the materials are buried. (3) As soon as practicable after deposition of the asbestos-containing waste materials but no later than at the end of each operating day, the asbestos-containing waste material deposited at the site during the operating day shall be buried with at least twelve inches of compacted nonasbestos-containing material. Alternatively, any owner or operator of an active asbestos waste disposal site may apply for approval of the Director [of Environmental Protection, a.k.a. Director of the OEPA] to utilize alternative control measures to bind dust, control wind erosion or convert [friable] asbestos to non-friable forms. (4) During the unloading, deposition, burial, and initial compaction of asbestos-containing materials, the owner or operator of the active [asbestos] waste disposal site shall establish a restricted area adequate to deter the unauthorized entry of the general public and any unauthorized personnel from any location within one hundred feet of the operations, and shall display the following information on a sign not less than twenty by fourteen inches, so that it is visible before entering the restricted area: ASBESTOS DUST HAZARD Do Not Remain In Area Unless Your Work Requires It Breathing Asbestos Dust Is Hazardous To Your Health	√	√	Appl	Pertinent to the management of asbestos-containing materials. Also note that requirements from paragraphs (A) and (B) which are pertinent to disposal of asbestos-containing materials, are included in the OSDF Impacted Materials Placement Plan.. NOTE: The sizing & language for warning signs under (B)(4) at left conflicts with that required by OSHA under 29 CFR §1926.1101(k)(7). The FEMP will follow either the Ohio active asbestos disposal sites language or the OSHA required sign language: DANGER ASBESTOS CANCER & LUNG DISEASE HAZARD AUTHORIZED PERSONNEL ONLY OSHA does not impose a minimum sign size.	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
Asbestos Emission Control, Standard for Inactive Asbestos Disposal Sites OAC 3745-20-07© [40 CFR Part 61, Subpart M-National Emission Standard for Asbestos, Standard for Inactive Waste Disposal Sites, for Asbestos Mills and Manufacturing and Fabricating Operations 40 CFR §61.151]	The owner or operator may use an alternate control method that has received prior approval of the Director [of Environmental Protection, a.k.a. Director of the OEPA] rather than comply with the requirements of paragraph (A) [emissions and cover requirements] or (B) [posting and access control requirements] of this rule.	√	√	Appl	These requirements for inactive asbestos waste disposal sites are very similar to those for active asbestos waste disposal sites under OAC 3745-20-06 (preceding entry). During soil remediation activities under this remedial action project, the requirements for active asbestos disposal sites (preceding entry) will be followed while managing friable asbestos-containing material. Also note that requirements pertinent to disposal of asbestos-containing materials under paragraphs (A) and (C) of OAC 3745-20-07 are included in the OSDF Impacted Materials Placement Plan.	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
Asbestos Emission Control, Standard for Inactive Asbestos Disposal Sites OAC 3745-20-07(D) [40 CFR Part 61, Subpart M-National Emission Standard for Asbestos, Standard for Inactive Waste Disposal Sites for Asbestos Mills and Manufacturing and Fabricating Operations, 40 CFR §61.151(d)]	Each owner or operator of an inactive asbestos waste disposal site shall notify the Director [of Environmental Protection, a.k.a. the Director of the OEPA] in writing prior to disturbing or removing any asbestos-containing waste material. The notice shall contain:	✓	✓	✓	Submission of the project-specific IRDPs to OEPA constitute this notification.	
	• the reason for disturbing the waste,					The reason for disturbing the material is documented in the OU2, OU5 and OU3 RODs.
	• the procedures to be used to control emissions,					FEMP Fugitive Dust Control BAT Determination, Fugitive Dust Control Requirements (RM-0047), the OSDF Impacted Materials Placement Plan (20100-PL-007), and following sections of the Sitewide Excavation Plan: 2.5.8 Special Materials 3.3.2.2 Special Materials 5.1.2.2 Fugitive Emissions F.4.1.1 Asbestos
	• the duration of the operation, and				Project schedules contained in project-specific IRDPs.	
	• the location of the final disposal site.					The OSDF, unless the OSDF WAC is not met; else, an off-site permitted/licensed disposal facility.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
National Emission Standards for Hazardous Air Pollutants, Subpart H—National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities, 40 CFR §61.90, §61.91 and §61.92 - .97 [Radiation Protection of the Public and the Environment DOE Order 5400.5 Chapter II (1)(b)]	Emissions of radionuclides (except radon-220 and radon-222) to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr. To determine compliance with the standard, radionuclide emissions shall be determined and effective dose equivalent values to members of the public calculated using EPA-approved sampling procedures, computer models CAP-88 or AIRDOS-PC, or other procedures for which EPA has granted prior approval.	Appl	Appl	Appl		Section 6 of the Integrated Environmental Monitoring Plan (IEMP) and the following sections of the Sitewide Excavation Plan: 5.1.2.3 Airborne Radiological Particulates 5.1.2.4 Radon 5.1.2.5 Direct Radiation
National Emission Standards for Hazardous Air Pollutants, Subpart Q—National Emission Standards for Radon Emissions From Department of Energy Facilities 40 CFR §61.190, §61.192	No source at a DOE facility shall emit more than 20 pCi/m^2/sec of radon-222 as an average for the entire source into the air.	Appl	Appl	R&A	The existing distribution of contaminants within the site soils attains compliance with this requirement. Will be addressed sitewide as necessary by the Integrated Environmental Monitoring Plan (IEMP).	

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs)
(continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
SURFACE WATER PATHWAY						
	WETLANDS/FLOODPLAIN PROTECTION					
Executive Order 11990, Protection of Wetlands	Federal agencies are required to take action to avoid adversely impacting wetlands wherever possible, to minimize wetland destruction, and to preserve the values of wetlands.	Appl	Appl		Floodplain and wetland impacts associated with soil remediation activities will be minimized and avoided to the maximum extent practicable. Projects with unavoidable impacts will be undertaken in accordance with 33 CFR Parts 323 and 330. Based on an overlay of the Remediation Area 1 Phase 2 boundary on the FEMP Jurisdictional Wetland Delineation (Drwg. 75X-5500-G-00372), approximately 0.71 acres of jurisdictional wetlands are anticipated to be dredged and filled during excavation of the remediation area. Dredge and fill activities within these wetlands will comply with the substantive requirements of Nationwide Permit Nos. 38 and 26 (subsequent entry) — promulgated in Appendix A of 33 CFR Part 330 (subsequent entry) and OEPA's corresponding State Water Quality Certification (see subsequent entry for OAC 3745-32).	Approximately 35.9 acres of jurisdictional wetlands and 8.9 acres of waters of the United States were identified on the FEMP property as a result of the 1993 Jurisdictional Wetlands & Waters of the U.S. (1993 FEMP Wetland Delineation). The U.S. Army Corps of Engineers officially approved the delineation on August 19, 1993. See also: Appendix H of the OU2 FS Report; Appendix J of the OU5 FS Report, and Appendix J of OU3 RI/FS. The Natural Resources Restoration Plan (NRRP); also, operable unit closure reports must include NEPA compliance, as per following sections of the Sitewide Excavation Plan: 1.4.2 Related Documents 7.3 Certification Report 7.4 Other Related Future Documents

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	WETLANDS/FLOODPLAIN PROTECTION, continued					
Procedure for Implementing the National Environmental Policy Act 40 CFR §6.302(a)	Federal agencies conducting certain activities must avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands, and avoid support of new construction in wetlands when a practicable alternative exists.	Appl	Appl		See preceding.	See preceding.
Executive Order 11988, Floodplain Management Procedures for Implementing the National Environmental Policy Act 40 CFR §6.302(b)	Federal agencies must evaluate the potential effects of actions they may take in a floodplain to avoid, to the extent possible, adverse effects associated with direct and indirect development of a floodplain.	Appl	Appl		Remediation is needed, and can not be avoided. Nationwide Permit # 38 (subsequent entry) authorizes such remedial activity in a floodplain. A wetland/floodplain assessment has been conducted. Remediation Area 1 Phase 2 is located *outside* the 100 yr floodplains of Paddy's Run and of the Great Miami River. No floodplain impacts will result from excavation activities associated with this soil remediation project.	An updated floodplain determination was conducted in October 1992 for Paddy's Run using the U.S. Army Corps of Engineers' standard HEC2 water surface profile analysis program. The 100-year flood elevations reach the western slope of the Inactive Flyash Pile and the toe of the South Field slope.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	WETLANDS/FLOODPLAIN PROTECTION, continued					
DOE Compliance with Floodplain/ Wetlands Environmental Review Requirements 10 CFR §1022.3(a), 3(b)(1), 3(b)(2), 3(b)(3), 3(b)(5), 3(b)(6), 3(c), 3(d), 3(e)	DOE shall exercise leadership and take action to: • Avoid to the extent possible the long- and short-term adverse impacts associated with the destruction of wetlands and the occupancy and modification of floodplains and wetlands, and avoid direct and indirect support of floodplain and wetland development wherever there is a practicable alternative. • Incorporate floodplain management goals and wetlands protection considerations into its planning, regulatory, and decision-making processes and shall to the extent practicable: - Reduce the hazard and risk of flood loss. - Minimize the impact of floods on human safety, health, and welfare. - Restore and preserve natural and beneficial values served by the floodplain. - Minimize the destruction, loss, or degradation of wetlands. - Preserve and enhance the natural and beneficial values of wetlands. • Undertake a careful evaluation of the potential effects of any DOE action taken in a floodplain and any new construction undertaken by DOE in wetlands not located in a floodplain. • Identify, evaluate, and as appropriate, implement alternative actions which may avoid or mitigate adverse floodplain/wetlands impacts. • Provide opportunity for early public review of any plans or proposals for actions in floodplains and new construction in wetlands.	Appl	Appl	Appl	10 CFR Part 1022 is the DOE implementing regulation for Executive Orders 11988 and 11990 (see corresponding preceding entries).	Remediation decisions included avoidance to/ minimization of wetlands impacts. See: Appendix H of the OU2 FS Report; Appendix J of the OU5 FS Report, and Appendix J of OU3 RI/FS. Also, see preceding entries.
DOE Compliance with Floodplain/ Wetlands Environmental Review Requirements 10 CFR §1022.5(b), (h)	This part shall apply to all proposed floodplain/wetlands actions, including those sponsored jointly with other agencies, where practicable alternatives to the proposed actions are still available. The policies and procedures of this part which are applicable to floodplain actions shall apply to all proposed actions which occur in a wetlands located in a floodplain.	Appl	Appl	Appl	See preceding entries.	See preceding entries.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	WETLANDS/FLOODPLAIN PROTECTION, continued					
DOE Compliance with Floodplain/ Wetlands Environmental Review Requirements 10 CFR §1022.11 (a), (b), (c)	Concurrent with its review of a proposed action to determine appropriate NEPA requirements, DOE shall determine applicability of the floodplain management and wetlands protection requirements of this part. In making a floodplain determination, DOE shall utilize the Flood Insurance Rate Maps (FIRMs) or the Flood Hazard Boundary Maps (FHBMs) prepared by the Federal Insurance Administration of the Department of Housing and Urban Development to determine if a proposed action is located in the base or critical action floodplain, as appropriate. For a proposed action in an area of predominately federal or state land holdings where FIRM or FHBM maps are not available, information shall be sought from the land administering agency (e.g., Bureau of Land Management, Soil Conservation Service, etc.) or from agencies with floodplain analysis expertise.	Appl	Appl		See preceding entries.	See preceding entries.
DOE Compliance with Floodplain/ Wetlands Assessments 10 CFR §1022.12(a)	If DOE determines, pursuant to 10 CFR §§ 1022.5 and 1022.11, that this part is applicable to the proposed action, DOE shall prepare a floodplain/wetlands assessment, according to the requirements in this section (10 CFR §1022.12).	Appl	Appl		See preceding entries.	See preceding entries.
DOE Compliance with Floodplain/ Wetlands Environmental Review Requirements 10 CFR §1022.15(a)	If DOE finds that no practicable alternative to locating in the floodplain/wetland is available, consistent with the policy set forth in Executive Order 11988, DOE shall, before taking action, design, or modify its action in order to minimize potential harm to or within the floodplain or wetland.	Appl	Appl		See preceding entries.	See preceding entries.
Federal Water Pollution Control Act (a.k.a., Clean Water Act) General Regulatory Policies 33 CFR §323.3	Permits will be required for the discharge of dredged or fill material into waters of the United States including wetlands. Certain discharges specified in 33 CFR Part 330 are permitted by that regulation (nationwide permits). If a discharge of dredged or fill material is not permitted by 33 CFR Part 330 (Nationwide Permits), an individual section 404 permit will be required for the discharge of dredged or fill material into waters of the United States. Discharges of dredged or fill material into waters of the United States done by or on behalf of any Federal agency, other than the Corps of Engineers, are subject to the authorization procedures of these regulations. Remedial actions involving the discharge of dredge and fill material into these areas shall meet the substantive requirements of this section and 40 CFR Part 230.	Appl	 Appl		See the preceding entry for Executive Order 11990 (first Floodplains/Wetlands Protection entry). Discharges of dredged and fill material not authorized by a NWP will be conducted in accordance with the substantive requirements of these regulations.	See preceding entries.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	WETLANDS/FLOODPLAIN PROTECTION, continued					
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Nationwide Permit (NWP) Program 33 CFR Part 330	The U.S. Army Corps of Engineers has authorized certain categories of activities involving the discharge of dredged and fill material into wetlands and waters of the United States under the NWP program. Activities involving the discharge of dredged and fill material will be conducted in accordance with the substantive requirements of applicable NWPs as required. Discharges not authorized by NWP will be conducted in accordance with the substantive requirements of 33 CFR Part 323 and 40 CFR Part 230.	√	Appl	R&A	See preceding entries.	Following sections of the Sitewide Excavation Plan: 3.3.1 Implementation of Construction, Excavation, and Material Handling Activities 5.1.1 Natural Resource Impacts 5.1.3 Surface Water Pathway
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Nationwide Permit Program 33 U.S.C. §1341(a)(1), (d) 33 CFR §330.1(c)	An activity is authorized under an Nationwide Permit (NWP) only if that activity and the permittee satisfy all of the individual NWP's terms and conditions. Potentially applicable NWPs include: • Nationwide Permit #38 — Cleanup of Hazardous and Toxic Waste - This permit authorizes specific activities required to affect the containment, stabilization or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority provided the permittee notifies the district engineer. - For discharges in special aquatic sites, including wetlands, the notification must include a delineation of affected special aquatic sites, including wetlands. - This nationwide permit does not authorize the establishment of new disposal sites or the expansion of existing sites used for the disposal of hazardous or toxic waste. • Nationwide Permit #26 — Headwaters and Isolated Waters Discharges - The discharge does not cause the loss of more than 10 acres of waters of the United States. - The permittee notifies the district engineer if the discharge would cause the loss of waters of the United States greater than one acre. - For discharges in special aquatic sites, including wetlands, the notification must also include a delineation of affected special aquatic sites, including wetlands. - The discharge, including all attendant features, both temporary and permanent, is part of a single and complete project.	Appl	Appl	R&A	See preceding entry for Executive Order 11990 (first Floodplains/Wetlands Protection entry).	January 17, 1992 letter from Donald R. Schregardus, Director of the OEPA, to the U.S. Army Corps of Engineers, "401 Certification — Grant," the OEPA conditionally certified that projects authorized by NWP #s 38 and 26 will comply with the applicable provisions of the Federal Water Pollution Control Act.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	WETLANDS/FLOODPLAIN PROTECTION, continued					
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Nationwide Permit Program Section B(26) to Appendix A of 33 CFR Part 330	Discharges of dredged or fill material into headwaters and isolated waters [under Nationwide Permit # 26] are approved provided: • The discharge does not cause the loss of more than 10 acres of waters of the United States. • The permittee notifies the district engineer if the discharge would cause the loss of waters of the United States greater than one acre. • For discharges in special aquatic sites, including wetlands, the notification must also include a delineation of affected special aquatic sites, including wetlands. • The discharge, including all attendant features, both temporary and permanent, is part of a single and complete project.	√	√	√	See preceding and following entries.	See preceding and following entries.
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Nationwide Permit Program 33 CFR §330.4 (c)(1) Ohio Section 401 State Water Quality Certifications OAC 3745-32-02	Section 401 State Water Quality Certification pursuant to Section 401 of the Clean Water Act, or waiver thereof, is required to prior to issuance or reissuance of individual or nationwide permits authorizing (dredge and fill) activities which may result in a discharge into waters of the United States. State Water Quality Certification is granted provided: 1. The discharge does not prevent or interfere with the attainment or maintenance of applicable water quality standards; and 2. The discharge does not result in a violation of any applicable provisions of the Federal Water Pollution Control Act (a.k.a., Clean Water Act).	Appl	Appl		See preceding and following entries.	January 17, 1992 letter from Donald R. Schregardus, Director of the OEPA, to the U.S. Army Corps of Engineers, "401 Certification — Grant," the OEPA conditionally certified that projects authorized by the NWP #s 38 and 26 (see previous entry) will comply with the applicable provisions of the Federal Water Pollution Control Act.
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Nationwide Permit Program Section C of Appendix A to 33 CFR Part 330	In addition to the General Conditions, the following [Section 404 only] conditions apply only to activities that involve the discharge of dredge or fill material and must by followed in order for authorization of the nationwide permits to be valid: • No discharge of dredged or fill material may consist of unsuitable material (e.g., trash, debris, car bodies, etc.). And material discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act). • Discharges of dredged or fill material into waters of the United States must be minimized or avoided to the maximum extent practicable at the project site, unless the District Engineer has approved a compensation mitigation plan for the specific regulated activity.	√	√		See preceding entries.	The Natural Resources Restoration Plan (NRRP)

PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	WETLANDS/FLOODPLAIN PROTECTION, continued					
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Nationwide Permit Program Section C of Appendix A to 33 CFR Part 330	Factors that the District Engineer will consider when determining the acceptability of appropriate and practicable mitigation include, but are not limited to: • To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of overall project purposes. • To the extent appropriate, permittees should consider mitigation banking and other forms of mitigation including contribution to wetland trust funds, which contribute to the restoration, creation, replacement, enhancement, or preservation of wetlands. • Furthermore, examples of mitigation that may be appropriate and practicable include but are not limited to: reducing the size of the project; establishing buffer zones to protect aquatic resource values; and replacing the loss of aquatic resource values by creating, restoring, and enhancing similar functions and values. In addition, mitigation must address impacts and cannot be used to offset the acreage of wetland losses that would occur in order to meet the acreage limits of some of the nationwide permits.	√	√		See preceding entries.	The Natural Resources Restoration Plan (NRRP)
Federal Water Pollution Control Act (a.k.a., Clean Water Act) §404 (33 U.S.C. §1344) Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material, Subpart B—Compliance With the Guidelines, Restrictions on Discharge 40 CFR §230.10	No discharge of dredged or fill material shall be permitted: • If there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. • Unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem. No discharge of dredged or fill material shall be permitted if it: • Causes or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable state water quality standard. • Violates any applicable toxic effluent standard or prohibition under section 307 of the Clean Water Act. • Jeopardizes the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, as amended, or results in likelihood of the destruction or adverse modification of a habitat which is determined to be a critical habitat under the Endangered Species Act of 1973, as amended.	Appl	√	√	See preceding entries.	Appendix H of the OU2 FS Report; Appendix J of the OU5 FS Report, and Appendix J of OU3 RI/FS.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DISCHARGE TO SURFACE WATER					
Pollution to Waters of the State ORC 6111.04	No person shall cause pollution or place or cause to be placed any sewage, industrial waste, or other wastes in a location where they cause pollution of any waters of the state. No person to whom a permit has been issued shall place or discharge, or cause to be placed or discharged, in any waters of the state any sewage, industrial waste, or other wastes in excess of the permissive discharges specified under such existing permit without first receiving a permit from the Director to do so. Pollution to waters of the state is prohibited.	Appl	Appl	R&A		FEMP Site NPDES Permit Number 1IO00004*ED, the FEMP Stormwater Pollution Prevention Plan (RM-0039), Section 4 of the Integrated Environmental Monitoring Plan (IEMP), and the following section of the Sitewide Excavation Plan: 5.1.3 Surface Water Pathway
Compliance with Ohio Water Pollution Control Requirements ORC 6111.07(A), (C)	Failure to comply with water pollution control requirements is prohibited.	√	Appl	Appl		See preceding.
Water Quality Standards, Criteria Applicable to All Waters OAC 3745-1-04	To every extent practical and possible, all surface waters of the State of Ohio shall be free from: • Suspended solids or other substances that enter the waters as a result of human activity that will form putrescent or otherwise objectionable sludge deposits • Floating debris, oil, scum and other floating materials entering the waters as a result of human activity in amounts sufficient to be unsightly or cause degradation • Materials entering the waters as a result of human activity producing color, odor or other conditions in such a degree as to create a nuisance • Substances entering the waters as a result of human activity in concentrations that are toxic or harmful to human, animal or aquatic life and/or are rapidly lethal in the mixing zone • Nutrients entering the waters in concentrations that create nuisance growths of aquatic weeds or algae	√	R&A	R&A		See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DISCHARGE TO SURFACE WATER, continued					
Water Quality Standards, Antidegradation Policy OAC 3745-1-05(A)&(B)	(A) Existing instream water uses as defined in OAC 3745-1-07 [subsequent entry] shall be maintained and protected. No further water quality degradation which would interfere with or become injurious to designated uses is allowable. (B) Waters in which existing water quality is better than the criteria prescribed in these rules and exceeds those levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water shall be maintained and protected. ... Degradation of water quality shall not interfere or become injurious to existing or planned uses, and the Director shall require that ... feasible management or regulatory programs pursuant to Section 208 and 303 of the Act [Clean Water Act], 33 U.S.C. Sections 1288 and 1313, be applied to nonpoint sources.	√	√	Appl	Soil remedial action projects will ensure that existing instream water uses of the Great Miami River and Paddy's Run will be maintained as health protective.	See preceding.
Water Quality Standards, Great Miami River OAC 3745-1-21	Paddy's Run and the Great Miami River are designated as: • Warm water aquatic life habitat • Agricultural and industrial water supply • Primary contact recreation The Great Miami River between Ross Road (RM 95.7) to Taylorsville Dam (RM 92.6) is a state resource water, and RM 130 and 118 are public water supplies.	Appl	Appl	Appl	Discharges to the Great Miami River and Paddy's Run must not cause a violation of applicable numeric or narrative water quality standards for these designations. The FEMP effluent discharge pipe, located at River Mile (RM) 24.73 on the Great Miami River, is downstream of the state resource waters and public water supplies.	See preceding.
National Pollutant Discharge Elimination System 40 CFR §122.26(a)(l)(ii), 40 CFR §122.26(b)(14)(v), (x)	A discharge composed entirely of storm water associated with industrial activity is required to obtain a NPDES permit. These categories of facilities are considered to be engaging in "industrial activity": • Landfills, land application sites, and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described under this subsection), including those that are subject to regulation under Subtitle D of RCRA; and • Construction activities including clearing, grading, and excavation that disturbs five acres or more of total land area.	Appl	Appl	Appl	Discharges of stormwater associated with industrial and/or construction activities are regulated in accordance with the existing FEMP NPDES Permit, and the FEMP Stormwater Pollution Prevention Plan.	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DISCHARGE TO SURFACE WATER, continued					
Ohio NPDES Permits, Ohio NPDES Permits Required OAC 3745-33-02(A)	No person may discharge any pollutant or cause, permit, or allow a discharge of any pollutant [from a point source] without applying for and obtaining an Ohio NPDES permit in accordance with the requirements of this Chapter, 3745-33.	√	√	√	See preceding and following entries.	FEMP Site NPDES Permit (Ohio EPA Number 1IO00004*ED), and the FEMP Stormwater Pollution Prevention Plan (RM-0039).
Ohio NPDES General Permits, Ohio NPDES Permit Required OAC 3745-38-02(A)	No person may discharge any pollutant or cause, permit, or allow a discharge of any pollutant from a point source without either applying for and obtaining an Ohio NPDES permit in accordance with the requirements of Chapter 3745-33 of the Administrative Code [preceding entry], ... or have authorization to discharge under an Ohio NPDES general permit in accordance with the requirements of this chapter [3745-38]. **NOTE:** In September 1992, the FEMP applied for an individual stormwater permit to cover its industrial stormwater discharges to Paddy's Run. On the basis of the information provided in the original FEMP Stormwater Permit Application, Ohio EPA has chosen to regulate FEMP site industrial stormwater discharges under the individual permit process (OAC 3745-33, preceding entry), by incorporating stormwater monitoring requirements at Paddy's Run into the NPDES Permit. The site NPDES permit also addresses discharges of stormwater associated with construction activities by requiring a Stormwater Pollution Prevention Plan that defines the manner in which these discharges will be managed.	√	√	√	In accordance with the note at left, the general permitting process described in OAC 3745-38 is not applicable to the FEMP site stormwater discharges. Rather, these are regulated within the context of the existing FEMP NPDES Permit (Ohio EPA Number 1IO00004*ED) and the FEMP Stormwater Pollution Prevention Plan (RM-0039), both of which derive their regulatory basis from OAC 3745-33 (preceding entry).	See preceding entries.
Rules and Regulations of the Hamilton County Soil and Water Conservation District Governing Earthwork for Unincorporated Hamilton County, Ohio	Temporary and/or permanent erosion and sediment control features and devices shall be designed and constructed in general accordance with the State of Ohio Temporary Erosion Control Specifications. *Exempted* from these requirements are: • *any public work performed by or under control of any governmental agency*, provided such operations do not cause instability of any adjacent or contiguous property and substantially equivalent sediment control policies are applied [3.10 E]. • *operations involving process and stockpiling of soils or rock materials where controlled by other regulations*, provided such operations do not cause instability of any adjacent or contiguous property [3.10 H].	√	TBC	TBC		FEMP Site NPDES Permit (OEPA Number 1IO00004*ED), and the FEMP Stormwater Pollution Prevention Plan (RM-0039), and the following sections of the Sitewide Excavation Plan: 5.1.3 Surface Water Pathway App F Implementation of Construction

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DISCHARGE TO SURFACE WATER, continued					
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Subpart K—Best Management Practices (BMP) Programs 40 CFR §125.104	BMP programs shall be developed in accordance with good engineering practices and: 1) Be documented in narrative form and include any necessary plot plans, drawings or maps; 2) Establish specific objectives for the control of toxic and hazardous pollutants: (a) Each facility component or system shall be examined for its potential for causing a release of significant amounts of toxic or hazardous pollutants to waters of the United States due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc. (b) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances to result in significant amounts of toxic or hazardous pollutants reaching surface waters, the program should include a prediction of the direction, rate of flow and total quantity of toxic or hazardous pollutants which could be discharged from the facility as a result of each condition or circumstance; 3) Establish specific BMPs to meet the objectives identified in (2) above, addressing each component or system capable of causing a release of significant amounts of toxic or hazardous pollutants to the waters of the United States.		Appl	R&A	BMP requirements will be met by implementing FEMP's BMP Plan. The BMP Plan will be progressively updated to accommodate changing site activities during the conduct of CERCLA remedial actions.	Addressed as part of the selected remedy described in the OU5 ROD. Also see preceding entries.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
GROUNDWATER PATHWAY						
	GROUNDWATER PROTECTION					
Safe Drinking Water Act 42 U.S.C. §1424(e)	All Federal financially assisted projects constructed in the area of a sole source aquifer and its principal recharge zone will be subject to EPA's review to insure that these projects are designed and constructed so that they do not create a significant hazard to public health.	Appl	Appl	Appl	A notice in 53 FR 15876 (May 4, 1988) designated the Buried Valley Aquifer System of the Great Miami/ Little Miami River Basins of southwestern Ohio as a sole or principal source of drinking water. The Fernald site is located above this aquifer.	EPA and OEPA review of project submittals
	WELLS — CONSTRUCTION					
Water Well Standards, Pumping Wells OAC 3745-9-08(C)	Pumps may only be primed with potable water.		Appl		Pertains to all well pumps that require priming.	The Sitewide CERCLA Quality Assurance Project Plan (SCQ), the Integrated Environmental Monitoring Plan (IEMP), and the individual project-specific plans for sampling.
Water Well Standards, Monitoring Well Maintenance and Modification OAC 3745-9-09(A) through (C), and (E) through (G)	Monitoring wells must be maintained or modified to avoid cross-contamination of groundwater.		Appl		Pertains to all groundwater wells and piezometers.	The Sitewide CERCLA Quality Assurance Project Plan (SCQ), the Integrated Environmental Monitoring Plan (IEMP), and the following section of the Sitewide Excavation Plan: F.6.3 Monitoring Well Preservation
	WELLS — ABANDONMENT					
Water Well Standards, Abandonment of Test Holes and Wells OAC 3745-9-10	Upon completion of testing, a test hole shall be either completely filled with grout or such other material as will prevent contaminants from entering groundwater. If a well [or similar device] containing walls is not being used for obtaining groundwater or for determining the quality, quantity, or level of groundwater, it shall be completely filled with grout or other similar material as will prevent contaminants from entering groundwater, or maintained in strict accordance with all applicable requirements of OAC 3745-9-09.		Appl	Appl	After they are no longer needed, wells, peizometers and lysimeters are to be properly plugged and abandoned in accordance with these requirements.	The Sitewide CERCLA Quality Assurance Project Plan (SCQ), the Integrated Environmental Monitoring Plan (IEMP), and the following section of the Sitewide Excavation Plan: F.6.1 Plugging and Abandonment F.6.2 Monitoring Well Excavation

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs)
(continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
SOIL REMEDIATION						
	CLOSURE OF HAZARDOUS WASTE MANAGEMENT UNITS					
OEPA Closure Plan Review Guidance for RCRA Facilities (Interim Final) September 1, 1993	Federal Regulations of May 2, 1986 (50 FR 16422) and March 19, 1987 (52 FR 8704) modified the closure performance standard such that risk assessment, or what constitutes "decontamination" of a site, may be considered by EPA as a closure option. On December 8, 1988 (see OAC 3745-67-28), the OEPA adopted the equivalent of the EPA's March 19, 1987 regulations, clarifying that risk assessment may be a closure option. It is OEPA and its Division of Hazardous Waste Management (DHWM) practice to consider risk assessment/risk-based closure as a possible third option for closure for all types of units [hazardous waste management units (HWMUs) and solid waste management units (SWMUs)].		TBC	√	Risk-based closures are to be performed for HWMUs with media contamination as integrated with the CERCLA soil remediation activities (see following entry).	Risk-based soil cleanup levels, known as FRLs, are established in the RODs. Following sections of the Sitewide Excavation Plan: 2.1.1.1 Hazardous Waste Management Units 2.2.4 HWMU Closure 3.3.4.4 HWMU Closure 4.0 Location-Specific Excavation Approaches App F Implementation of Construction
RCRA/CERCLA Integrated Closure Director's Final Findings and Orders (June 4, 1996) Section V.1	The Respondent ... shall comply with the closure regulations contained in OAC rules 3745-66-11(A) and (B), 3745-66-11(C) as applicable, 3745-66-14, and 3745-66-16 through 3745-66-20 as applicable for the HWMUs [hazardous waste management units] listed in Attachment A [to these Orders].		√	√	Pertinent to closures of following HWMUs (see Table 2-1 of the Sitewide Excavation Plan, derived from the DF&O's Attachment A) during the CERCLA soil remediation activities: HWMU 41, Sludge Drying Beds (surface impoundment)	See subsequent entries in this table for those OAC rules determined by the RODs as ARARs. While OAC 3745-66-11 and -14 are presented in the next two entries, entries for 3745-66-16 through -20 for post-closure are addressed in the subsequent post-closure subsection of this table.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	CLOSURE OF HAZARDOUS WASTE MANAGEMENT UNITS, continued					
RCRA/CERCLA Integrated Closure Director's Final Findings and Orders (June 4, 1996) Section V.1	The Respondent ... shall comply with the closure regulations contained in OAC rules 3745-66-11(A) and (B), 3745-66-11(C) as applicable, 3745-66-14, and 3745-66-16 through 3745-66-20 as applicable for the HWMUs [hazardous waste management units] listed in Attachment A [to these Orders].		√	√	Pertinent to closures of HWMUs listed in preceding entry during the CERCLA soil remediation activities.	See subsequent entries in this table for those OAC rules determined by the RODs as ARARs. While OAC 3745-66-11 and -14 are presented in the next two entries, entries for 3745-66-16 through -20 for post-closure are addressed in the subsequent post-closure subsection of this table.
Closure and Post-Closure Under Interim Standards Closure Performance Standard OAC 3745-66-11 [40 CFR §265.111]	The owner or operator shall close his facility or hazardous waste management unit (HWMU) in a manner that: (A) minimizes the need for further maintenance; (B) controls, minimizes, or eliminates, to the extent necessary to protect public health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and (C) complies with these closure requirements.	√	Appl	Appl	Pertinent to closures of HWMUs during the CERCLA soil remediation activities; also cited in RCRA/CERCLA Integrated Closure DF&O @ V.1. **NOTE:** These requirements are the same as those for new hazardous waste facilities under OAC 3745-55-11 (40 CFR §264.111). **NOTE:** DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	Following sections of the Sitewide Excavation Plan: 2.1.1.1 Hazardous Waste Management Units 2.2.4 HWMU Closure 3.3.4.4 HWMU Closure 4.0 Location-Specific Excavation Approaches App F Implementation of Construction

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs)
(continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Closure and Post-Closure Under Interim Standards Disposal or Decontamination of Equipment, Structures and Soils OAC 3745-66-14 [40 CFR §265.114]	During the partial and final closure periods, all contaminated equipment, structures, and soils must be properly disposed of or decontaminated [to risk-based cleanup levels] [i.e., clean closed, have risk-based closure, or be closed in place], unless otherwise specified in: OAC 3745-67-28 Surface Impoundments: Closure and Post-Closure	√	Appl	Appl	Pertinent to closure of HWMU #41 Sludge Drying Beds during the CERCLA soil remediation activities; also cited in RCRA/CERCLA Integrated Closure DF&O @ V.1. **NOTE:** These requirements are the same as those for new hazardous waste facilities under OAC 3745-55-14 (40 CFR §264.114), with corresponding cross-references presented therein.	Risk-based soil cleanup levels, known as FRLs, are established in the RODs. Also see preceding entry.
CLOSURE OF HAZARDOUS WASTE MANAGEMENT UNITS, continued						
Surface Impoundments: [Surface Impoundments] Closure and Post-Closure Care OAC 3745-67-28	At closure of a surface impoundment HWMU, the owner or operator must remove or decontaminate [to risk-based cleanup levels] all waste residues, contaminated waste containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate. If the owner or operator demonstrates that not all contaminated soils can be practically removed or decontaminated [to risk-based cleanup levels], he must close the HWMU and perform post-closure care in accordance with the closure and post-closure care requirements that apply to landfills under OAC 3745-66-10 to 3745-66-20 and OAC 3745-68-10 (40 CFR §264.310).		√	√	Pertinent to closure of surface impoundment HWMUs during the CERCLA soil remediation activities, as cited in the preceding entry. **NOTE:** These requirements are the same as those for new hazardous waste facilities under OAC 3745-56-28 (40 CFR §264.228).	See preceding.
Landfills, Incinerators, Thermal Treatment, Miscellaneous Units: Closure and Post-Closure OAC 3745-68-10(A) [40 CFR §265.310(a)]	At final closure of a HWMU as a landfill ... the owner or operator must cover the HWMU ... with a final cover designed and constructed to: • provide long-term minimization of migration of liquids through the closed HWMU; • function with minimum maintenance; • promote drainage and minimize erosion or abrasion of the cover; • accommodate settling and subsidence so that the cover's integrity is maintained; and • have a permeability less than or equal to the permeability of any bottom liner system or natural subsoil present.	√	R&A	√	Pertinent to HWMUs that are "closed in place" — i.e., all contaminated soils can not practically be removed or decontaminated [to risk-based cleanup levels] — during the CERCLA soil remediation process. **NOTE:** DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs rather than close in-place (close as a landfill).	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	CLOSURE OF HAZARDOUS WASTE MANAGEMENT UNITS, continued					
RCRA/CERCLA Integrated Closure Director's Final Findings and Orders (June 4, 1996) Section V.2 in lieu of Closure and Post-Closure Under Interim Standards Closure Plan; Amendment of Closure Plan OAC 3745-66-12	The Respondent ... are hereby exempted from complying with OAC rule 3745-66-12 for the HWMUs identified in Attachment A of these Orders, provided that the Respondent: a. Submits the documents contained in Attachment C [of these Orders] to Ohio EPA in accordance with the dates established pursuant to the ACA [Amended Consent Agreement]. Within one week after submitting these documents to Ohio EPA, the Respondent shall submit a cross-reference index which contains pertinent page and section s identifications for each HWMU that is contained in the documents and said index shall be cumulative and reference all previous document locations. ... d. Implements the final remedies as reflected in the Records of Decision issued in accordance with the ACA.		√	√	Pertinent to closures of HWMUs listed in preceding entries (see Table 2-1 of the Sitewide Excavation Plan, derived from the DF&O's Attachment A) during the CERCLA soil remediation activities.	Section 3.0 of the Sitewide Excavation Plan
	RADIONUCLIDE CONCENTRATIONS					

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Radiation Protection of the Public and the Environment DOE Order 5400.5 Chapter I (4) and Chapter II (2)	An "as low as reasonably achievable (ALARA)" process is to be used in planning and carrying out all DOE activities that have the potential to cause radiation exposure to the public. ALARA requires judgement with respect to what is reasonably achievable. Factors that relate to societal, technological, economic, and other public policy considerations shall be evaluated to the extent practicable. Factors to be considered, at a minimum, include: • Maximum dose to members of the public; • Collective dose to the population; • Alternative processes, such as alternative treatment of discharge streams, operating methods, or controls; • Doses for each process alternative; • Cost for each of the technological alternatives; • Examination of the changes in cost among alternatives; and • Changes in societal impact associated with process alternatives (e.g., differential doses from various pathways). Except for meeting requirements of NEPA, qualitative analyses are acceptable, in most instances, for ALARA judgements, especially when the potential doses are well below the dose limit. The bases for these judgements should be documented. More detailed analyses should be considered if the decision might result in doses that approach the limit.	TBC	TBC		In addition to the evaluations conducted as part of the CERCLA selection of remedy process [(the short- and long-term risk assessments of the Comprehensive Remedial Action Risk Evaluation (CRARE) within the feasibility studies (FSs))], documentation of "equivalent evaluations" for environmental ALARA are performed in accordance with the "FEMP Environmental ALARA Plan" and retained as part of the site and project records.	Addressed through the approved selected remedy in the RODs. An ALARA goal is set in the OU5 ROD for the total uranium FRL.
10 CFR Part 834 (PROPOSED)			TBC			
Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, Subpart B—Standards for Cleanup of Land and Buildings Contaminated with Residual Radioactive Materials from Inactive Uranium Processing Sites 40 CFR §192.12(a)	Remedial actions shall be conducted so as to provide reasonable assurance that, as a result of residual radioactive materials, the concentration of radium-226 in land averaged over any area of 100 m^2 shall not exceed the background level by more than: • 5 pCi/g averaged over the first 15 cm of soil below the surface, and • 15 pCi/g, averaged over 15-cm-thick layers of soil more than 15 cm below the surface.	R&A	R&A	R&A	Met through the selection of FRLs based on risk assessment, followed by certification of cleanup.	The selected remedy in the OU2 and OU5 RODs established more stringent clean-up levels for radium-226 of 1.7 pCi/g, as opposed to 5.0 pCi/g above background.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Subpart C— Implementation 40 CFR §192.20	Compliance with this requirement should be shown through measurements performed within the accuracy of currently available types of field and laboratory instruments in conjunction with reasonable survey and sampling procedures.					
	RADIONUCLIDE CONCENTRATIONS, continued					
Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, Subpart C— Implementation 40 CFR §192.21(f) and §192.22(b)	Where radionuclides other than radium-226 and its decay product are present in sufficient quantity and concentration to constitute a significant radiation hazard from residual radioactive materials, remedial actions shall, in addition to satisfying the standards of Subpart A in 40 CFR §192.02 and Subpart B in 40 CFR §192.12 (both listed above), reduce other residual radioactivity to levels that are ALARA.	R&A	R&A	R&A		The approved selected remedy in the OU5 ROD set an ALARA goal for the total uranium FRL.
Postclosure Standards for Uranium and Thorium Mill Tailings, Subpart D— Standards for the Management of Uranium Byproduct Materials Pursuant to Section 84 of the Atomic Energy Act of 1954, as Amended 40 CFR §192.32 (b)(2)	The requirements for the management of uranium byproduct materials after closure of a disposal area [40 CFR §192.32(b)(1)] shall not apply to any portion of a disposal site which contains a concentration of radium-226 in land, averaged over areas of 100 m^2, which, as a result of uranium byproduct material, does not exceed the background level by more than the limits specified in 40 CFR §192.12(a) (see above).	R&A	R&A	R&A		See preceding.
Management of Thorium Mill Tailings, Subpart E— Standards for the Management of Thorium Byproduct Materials Pursuant to Section 84 of the Atomic Energy Act of 1954, as Amended 40 CFR §192.40 - §192.42	The following are requirements for the management of thorium byproduct materials: • The provisions for the management of uranium byproduct material (40 CFR §192.32) shall apply to thorium byproduct material and: - Provisions applicable to the element uranium shall also apply to the element thorium - Provisions applicable to radon-222 shall also apply to radon-220 - Provisions applicable to radium-226 shall also apply to radium-228 With the concurrence of EPA, alternative provisions may be substituted for any of the above requirements provided the alternative provisions will provide at least an equivalent level of protection for human health and environment.	R&A	R&A	R&A		See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	RADIONUCLIDE CONCENTRATIONS, continued					
Radiation Protection of the Public and the Environment, DOE Order 5400.5 Chapter IV (4)(a)	Guidelines for residual concentrations of radionuclides other than thorium and radium shall be derived from the basic dose limits by means of an environmental pathway analysis using specific property data where available. Procedures for these derivations are given in DOE/CH-8901. Residual concentrations of radioactive material in soil are defined as those in excess of background concentrations averaged over an area of 100 m^2.	TBC				Considered in the development of the selected remedy in the OU2 and OU5 RODs.
Radiation Protection of the Public and the Environment, DOE Order 5400.5 Chapter IV (4)(a)(1) 10 CFR Part 834 (PROPOSED)	If the average residual concentration of radionuclides in any surface or below- surface area less than or equal to 25 m^2 exceeds the limit or guideline by a factor of $(100/A)^{0.5}$ [where A is the area (in square meters) of the region in which the concentrations are elevated], limits for "hot spots" shall also be developed and applied. Procedures for calculating these hot spots limits, which depend on the extent of the elevated local concentrations, are given in DOE/CH-8901. In addition, reasonable efforts shall be made to remove any source of radionuclide that exceeds 30 times the appropriate limit in the soil, irrespective of the average concentration in the soil.	TBC	TBC			Considered in the development of the selected remedy in the OU2 and OU5 RODs.
Radiation Protection of the Public and the Environment, DOE Order 5400.5 Chapter IV (4)(a)(2)(3) 10 CFR Part 834 (PROPOSED)	The generic guidelines for residual concentrations of radium-226, radium-228, thorium-230, and thorium-232 are: • 5 pCi/g, averaged over the first 15 cm of soil below the surface; and • 15 pCi/g, averaged over 15-cm-thick layers of soil more than 15 cm below the surface. These guidelines take into account ingrowth of radium-226 from thorium-230 and of radium-228 from thorium-232, and assume secular equilibrium. If both thorium-230 and radium-226, or both thorium-232 and radium-228, are present and not in secular equilibrium, the appropriate guideline is applied as a limit for the radionuclide with the higher concentration. If other mixtures of radionuclides occur, the concentrations of individual radionuclides shall be reduced so that either the dose for the mixture will not exceed the basic dose limit or the sum of the ratios of the soil concentration of each radionuclide to the allowable limit for that radionuclide will not exceed 1. Explicit formulas for calculating residual concentrations guidelines for mixtures are given in DOE/CH-8901.	TBC	TBC		Included as it is more restrictive than the federal standard in 40 CFR §192, .02, .12(a), .20, .21(f), .22(b), .32(b)(2), .40-.42.	Considered in the development of the selected remedy in the OU2 and OU5 RODs.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
RADIONUCLIDE CONCENTRATIONS, continued						
Guidelines for Residual Radioactive Material—Surface Contamination DOE Order 5400.5 Chapter IV (4)(d) 10 CFR Part 834 (PROPOSED)	These generic surface contamination guidelines are applicable to existing structures and equipment. These guidelines are generally consistent with standards of the NRC (1982) and functionally equivalent to Section 4, "Decontamination for Release for Unrestricted Use," of Regulatory Guide 1.86, but apply to nonreactor facilities. These limits apply to both interior equipment and building components that are potentially salvageable or recoverable scrap. If a building is demolished, the guidelines in paragraph IV (6)(a) are applicable to the resulting contamination in the ground.		TBC		Will be used for any process facility building or structures built and/or used for the remedial action, including the AWWT, soil staging, etc.	The operable unit closure reports identified in Section 7.4 of the Sitewide Excavation Plan.
LEAD CONCENTRATION						
Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, OSWER Directive # 9355.4-12 (July 14, 1994)	EPA recommends using 400 ppm soil lead as a screening level for lead in soil for residential scenarios at CERCLA sites and at RCRA Corrective Action sites. Residential areas with soil lead below 400 ppm generally require no further action. Site-specific preliminary remediation goals (PRGs) at CERCLA sites and media cleanup standards at RCRA corrective action facilities for residential land use are described.	TBC	TBC			The selected remedy in the OU2 and OU5 RODs established this value as the lead FRL.
PCB CONCENTRATION						
Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution In Commerce, And Use Prohibitions, Subpart A—Applicability, Definitions 40 CFR §761.3	PCB materials which appear at concentrations less than 50 ppm are excluded from the PCB disposal requirements in this regulation.	R&A	√	R&A	Operable Unit 2 does not contain PCB materials which have a concentration greater than 50 ppm.	Following sections of the Sitewide Excavation Plan: 2.5.8 Special Materials 3.3.2.2 Special Materials F.4.1 Materials Which Require Special Handling

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	PCB CONCENTRATION, continued					
Subpart G— PCB Spill Cleanup Policy, Requirements for PCB Spill Cleanup 40 CFR §761.125(c)	PCBs at a concentration of greater than 50 ppm are subject to TSCA decontamination requirements in 40 CFR §761.120(b). Soil in restricted access areas contaminated by a PCB spill shall be cleaned to 25 ppm PCBs by weight [40 CFR §761.125(c)(3)(v)]. At such times as restricted access areas (other than outdoor electrical substations) are converted to another use, the spill site shall be cleaned up to the non-restricted access area requirements of 40 CFR §761.125(c)(4)(v). Soils in non-restricted access areas contaminated by a PCB spill shall be cleaned to 10 ppm PCBs by weight, provided that the soil is excavated to a minimum depth of 10 inches. The excavated soil will be replaced with clean soil (i.e., containing less than 1 ppm PCBs by weight), and the spill site will be restored (e.g., replacement of turf) [40 CFR §761.125(c)(4)(v)].		TBC	TBC	Soil containing PCBs will be excavated as necessary to attain FRLs; soil concentrations are expected to be less than 50 ppm by weight.	The OU5 ROD established FRLs for the PCBs Arochlor-1254 and Arochlor-1260 as 0.13 mg/kg (ppm by weight).
Subpart G— PCB Spill Cleanup Policy, Sampling Requirements 40 CFR §761.130	Criteria that the EPA uses to determine the adequacy of the cleanup of spills resulting from the release of regulated PCB materials at concentrations of ≥50 ppm by weight. Applies to spills which occur after May 4, 1987.			TBC	Applies to spills of regulated PCB materials (i.e., those that have a concentration ≥50 ppm by weight) that occurred after May 4, 1987.	See preceding.
	CERTIFICATION OF CLEANUP					
Methods for Evaluating the Attainment of Cleanup Standards, Volume 1: Soils and Solid Media EPA 230/02-89-042 NTIS PB89-234959 February 1989	This EPA guidance document describes methods for testing whether soil chemical concentrations at a site are statistically below a cleanup standard or ARAR. If it can be reasonably concluded that the remaining soil or treated soil at a site has concentrations that are statistically less than relevant cleanup standards then the site can be judged protective of human health and the environment.	TBC	√			Following sections of the Sitewide Excavation Plan: 2.2.2 Certifying FRL Attainment 3.4 Certification App G Certification Design Rationale

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	CERTIFICATION OF CLEANUP, continued					
RCRA/CERCLA Integrated Closure Director's Final Findings and Orders (June 4, 1996) Section V.4 in lieu of Closure and Post-Closure Under Interim Standards Certification of Closure OAC 3745-66-15	For the HWMUs identified in Attachment A of these Orders, the Respondent ... are hereby exempted from complying with OAC rule 3745-66-15 provided that they submit Remedial Action Reports for the HWMUs contained in operable units 1, 3, and 5 within sixty (60) days from completion of remedial activities at each operable unit, which is determined by the U.S. EPA, in accordance with CERCLA. These Remedial Action Reports shall certify that the HWMUs contained in operable units 1 and 3 have been closed, and that the environmental media in operable unit 5 has been managed, in accordance with the final remedies contained in the Records of Decision and in accordance with the Director's closure performance standards. Attachment C [of these Orders] summarizes the documents that will be provided during remediation process. These CERCLA documents contain the substantive requirements of the RCRA and Ohio hazardous waste closure regulations.		√	√	Pertinent to closures of HWMUs listed in preceding entries (from Table 2-1 of the Sitewide Excavation Plan, derived from the DF&O's Attachment A) during the CERCLA soil remediation activities.	Following sections of the Sitewide Excavation Plan: 3.4.6 Certification Report 7.3 Certification Report 7.4 Other Related Future Documents

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs)
(continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
IMPACTED MATERIAL MANAGEMENT						
	DEFINITIONS & GENERAL FACILITY STANDARDS					
Resource, Conservation, and Recovery Act 42 U.S.C. §6903 (27)	Solid waste means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities, but does not include source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954.	Appl	√	√		Following sections of the Sitewide Excavation Plan: 3.0 General Implementation Approach App F Implementation of Construction
Solid Waste and Infectious Waste Regulations, Definitions OAC 3745-27-01 (B)(40)	Solid wastes means such unwanted residual solid or semisolid material as results from industrial, commercial, agricultural, and community operations, *excluding earth or material from construction, mining, or demolition operations, or other waste materials of the type that would normally be included in demolition debris, nontoxic flyash, spent nontoxic foundry sand, and slag and other substances that are not harmful or inimical to public health,* and includes, but is not limited to, garbage, tires, combustible and noncombustible material, street dirt, and debris. Solid waste does not include any material that is an infectious waste or a hazardous waste. For the purpose of this definition, "semisolid material" does not contain liquids which can be readily released under normal climatic conditions, as determined by method 9095 (paint filter liquids test) in SW-846: "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods".	Appl	√	√		See preceding.
Solid Waste and Infectious Waste Regulations, Definitions OAC 3745-27-01 (B)(15) OAC 3745-27-30 (A), (E), (H) ORC 3734.021 (A)(1)(c), (d)	Infectious waste is defined by nine categories of waste including human blood specimens and blood products, sharp wastes used in the treatment or inoculation of human beings, and any other waste materials generated in the diagnosis, treatment, or immunization of human beings. A generator who places all sharp infectious wastes and all unused hypodermic needles, syringes, and scalpel blades into a "SHARPS" container before they are transported and who generates less than 50 lbs. of infectious wastes each month and does not hold a certificate of registration as a generator of infectious wastes may transport and dispose of infectious wastes in the same manner as solid wastes. Treated infectious wastes can be transported and disposed in the same manner as noninfectious waste. Infectious waste that is also radioactive shall be managed in accordance with applicable Ohio Department of Health and U.S. Nuclear Regulatory Commission regulations.	Appl	√			See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Identification and Listing of Hazardous Waste, Definition of Hazardous Waste OAC 3745-51-03(A) [Identification and Listing of Hazardous Waste, Subpart A—General, Definition of Hazardous Waste 40 CFR §261.3(a)]	A solid waste is a hazardous waste, if: (1) it is not excluded from regulation as a hazardous waste under OAC 3745-51-04(B) [40 CFR §261.4(b)]; and (2)(a) it exhibits any of the characteristics of hazardous waste identified in OAC 3745-51-20 to 3745-51-24, with certain exceptions noted therein; or (2)(b) it is listed as hazardous waste in OAC 3745-51-31 to 3745-51-33 [40 CFR §§ 261.30 - 261.35]; or (2)(c) it is a mixture of solid and hazardous wastes; (2)(d) it is a mixture of hazardous wastes as defined in OAC 3745-51-03(A)(2)(a) to 3745-51-03(A)(2)(c) [three previous bullets in this entry] and source material, special nuclear material, or by product material, as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq., or other radionuclides. However, only the hazardous components of the mixture are subject to regulation for purposes of this [OAC 3745-51] chapter.	Appl	√	√		See preceding.
Identification and Listing of Hazardous Waste, Exclusions OAC 3745-51-04(B)(4) [Identification and Listing of Hazardous Waste, Subpart A—General, Exclusions 40 CFR §261.4(b)(4)]	The following are not hazardous wastes: fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels.	Appl	√	√		See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Identification and Listing of Hazardous Wastes, Requirements for Recyclable Materials OAC 3745-51-06(A)(3) [40 CFR §261.6]	The following recyclable materials are not subject to regulation under rules 3745-50-40 to 3745-50-62 or Chapters 3745-52 to 3745-57 and 3745-65 to 3745-69 of the Ohio Administrative Code [Parts 262 through 266 or 268, 270, or 124 of 40 CFR], and are not subject to the notification requirements of Chapter 3734 of the Ohio Revised Code [Section 3010 of RCRA]: (b) used batteries (or used battery cells) returned to a battery manufacturer for regeneration; (c) used oil that exhibits one or more of the characteristics of hazardous waste but is recycled in some other manner than being burned for energy recovery; (d) scrap metal.	√	√	Appl	Pertinent to remediation generated materials. Recycling of remediation generated materials may be conducted.	Operable Unit 3 Integrated RD/RA Work Plan
Termination of Operating Licenses for Nuclear Reactors Section C.4 Decontamination for Release for Unrestricted Use U.S. Nuclear Regulatory Commission Regulatory Guide 1.86 (June 1974)	A reasonable effort shall be made to eliminate residual surface radiological contamination and to achieve the acceptable surface contamination levels stated in this guide.	√	√	TBC	Pertinent to releasing to off-site any potentially radiologically-contaminated materials. Radiation surveys will be performed prior to releasing any potentially radiologically-contaminated materials off-site to demonstrate compliance with the surface contamination levels stated in this guide.	Operable Unit 1 Design Criteria Package

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Identification and Listing of Hazardous Waste, Subpart A—General, Definition of Hazardous Waste 40 CFR §261.3	Debris means solid material exceeding a 60-mm particle size that is intended for disposal and that is a manufactured object, plant or animal matter, or natural geologic material.	√	Appl	Appl	Applicable to hazardous debris that will be disposed of off-site.	Operable Unit 1 Design Criteria Package, and following sections of the Sitewide Excavation Plan: 1.3.2.4 Remediation Debris 2.5.10 Off-Site Shipments F.5.2 Off-Site Disposal

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs)
(continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Land Disposal Restrictions, Subpart A—General, Definitions Applicable to This Part 40 CFR §268.2	Hazardous debris means debris that contains a listed hazardous waste, or that exhibits a characteristic of hazardous waste.	√	Appl	Appl	"contains a listed hazardous waste" portion is not applicable to on-property disposal within a CAMU under the CAMU Rule as invoked under the OU5 ROD.	See preceding.
Hazardous Waste Regulations Contained-In Policy 58 FR 48092 (September 14, 1993) Proposed rule. 58 FR 59976 (November 12, 1993) Notice to extend comment. 59 FR 10778 (March 8, 1993) Clarification, partial withdrawal.	Hazardous soil means soil that contains RCRA hazardous waste(s) listed in Subpart D of 40 CFR Part 261, or that exhibits one or more of the characteristics of a hazardous waste as defined in Subpart C of 40 CFR Part 261. This proposed rule recommends contained-in determinations for hazardous debris, hazardous soil and other environmental media. Any person may petition the Regional Administrator to exclude, under 261.3(f)(2) or 261.3(g) of this chapter, hazardous debris and hazardous soil or other environmental media, including but not limited to groundwater, surface water, and sediment, from regulation as hazardous waste. The petition for a contained-in determination must include information sufficient to demonstrate that specific constituent concentrations in the hazardous debris, hazardous soil, or other environmental media to be excluded do not pose a hazard to human health and the environment at that site. (Such a petition is not necessary for remedial actions conducted pursuant to RCRA or CERCLA authorities provided that a similar determination is made by the Regional Administrator based on substantially equivalent information including public notice and comment requirements).		TBC	TBC	Will be considered for managing treated soil that is contaminated with RCRA waste.	Addressed in the selected remedy in the OU5 ROD. Following sections of the Sitewide Excavation Plan: 3.3 Remedial Action App F Implementation of Construction
Ohio Petroleum Contaminated Soil Policy OEPA Policy PP.01-03-200	The basis of the "contained in" policy is that environmental media, such as soil or groundwater, are not considered to be waste material. Because they are not a solid waste, the mixture rule, as set forth in OAC 3745-51-03, does not apply when they become contaminated with a listed hazardous waste but only contains the waste. The result of this policy is that if the waste constituents can be removed, the soil is no longer considered to contain a hazardous waste. Therefore, since soil is not a waste material it does not have to be de-listed in order for it to be used for its intended purpose. However, as long as the soil contains the waste material, it must be managed as a hazardous waste. If this concept is applied to petroleum-contaminated soil, the soil containing a petroleum hydrocarbon would not need to be managed as a solid waste if the contaminants were removed.	TBC	TBC		Allows for treated/clean soil to be used as backfill. Thus, all soil below FRLs can be backfilled as clean soil.	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Hazardous Waste Management System: General, Subpart B—Definitions 40 CFR §260.10	Remediation waste means all solid and hazardous waste, and all media (including groundwater, surface water, soils, and sediments) and debris, which contain listed hazardous wastes or which themselves exhibit a hazardous waste characteristic, that are managed for the purpose of implementing corrective action requirements under 40 CFR §264.101 and RCRA section 3008(h). For a given facility, remediation wastes may originate only from within the facility boundary, but may include waste managed in implementing RCRA sections 3004(v) or 3008(h) for releases beyond the facility boundary.	R&A	√	√	Under the Consent Agreement as amended in 1991 (a.k.a., the ACA), remediation at the FEMP is conducted under the authorities of CERCLA as well as RCRA sections 3004(v) and 3008(h).	Following secctions of the Sitewide Excavation Plan: 1.3.2.1 Soil and Sediment 1.3.2.6 Corrective Action Management Unit Rule 3.3.4.1 WAC Attainment
CERCLA Compliance with Other Laws Manual Section 2.7	Placement/disposal of waste does not occur under the following circumstances: • waste is consolidated within a unit (including an area of contamination that can be viewed as a single unit); • waste is capped in place, including grading prior to capping; • waste is treated in situ; and • waste is processed within the unit in order to improve its structural stability for closure or for movement of equipment over the area.	TBC	√	TBC	See following entry on the Corrective Action Management Unit.	See following entry.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Corrective Action Management Unit Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subpart S- 40 CFR §264.552 (58 FR 865829, February 16, 1993)	For the purpose of implementing remedies under Sec. 264.101 or RCRA Section 3008(h), the EPA Regional Administrator may designate an area at the facility as a corrective action management unit (CAMU). One or more CAMUs may be designated at a facility under the following conditions: 1) Emplacement of remediation wastes into or within a CAMU does not constitute land disposal of hazardous wastes. 2) Consolidation or emplacement of remediation wastes into or within a CAMU does not constitute creation of a unit subject to minimum technology requirements. 3) The CAMU shall facilitate the implementation of reliable, effective, protective, and cost-effective remedies. 4) Waste management activities associated with the CAMU shall not create unacceptable risks to humans or to the environment resulting from exposure to the wastes. 5) The CAMU shall include uncontaminated areas of the facility only if including such areas for the purpose of managing remediation waste is more protective than management of such wastes at contaminated areas of the facility. 6) Areas within the CAMU, where wastes remain in place after closure of the CAMU, shall be managed and contained so as to minimize future releases, to the extent practicable. 7) The CAMU shall expedite the timing of remedial activity implementation, when appropriate and applicable. 8) The CAMU shall enable the use, when appropriate, of treatment technologies (including innovative technologies) to enhance the long-term effectiveness of remedial actions by reducing the toxicity, mobility, or volume of wastes that will remain in place after closure of the CAMU. 9) The CAMU shall, to the extent practicable, minimize the land area of the facility upon which wastes will remain in place after closure of the CAMU. The owner/operator shall provide sufficient information to enable the Regional Administrator to designate a CAMU in accordance with the criteria in Sec. 264.552. **Note:** RCRA regulated units (HWMUs) within a CAMU are fully subject to RCRA closure regulations.	R&A	Appl	R&A	Per the selected remedy in the OU5 ROD: • the FEMP site (bounded by its property boundaries) is designated as a CAMU; • consolidation or management of on-site remediation wastes into or within the CAMU does not constitute creation of a unit subject to minimum technology requirements (MTRs) [OAC 3745-68-101 and 40 CFR §265.301(a)] and does not invoke land disposal restrictions (LDRs)[OAC 3745-59 and 40 CFR§§268.40 through .44].	Section 9.1.8 of the OU5 ROD.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Generator Standards, Hazardous Waste Determination OAC 3745-52-11(A) through (F) [Standards Applicable to Generators of Hazardous Waste, Subpart A—General, Hazardous Waste Determination 40 CFR §262.11]	A person who generates a solid waste must determine if that waste is a hazardous waste using the following method: 1) First determine if the waste is excluded from regulation (not a solid waste) under OAC 3745-51-04 (40 CFR §261.4).	√	R&A	R&A		Section 3.3.2 of the Sitewide Excavation Plan.
	2) If the waste is not excluded from regulation, then determine if the waste is listed as a waste ("listed waste") in OAC 3745-51-30 to 3745-51-33 (Subpart D of 40 CFR Part 261).				Not pertinent for on-site disposal because of the CAMU rule (see preceding entry); pertinent for off-site treatment or disposal.	See preceding entry, and following sections of the Sitewide Excavation Plan: 2.5.10 Off-Site Shipments F.5.2 Off-Site Disposal

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs)
(continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	3) For purposes of complying with OAC 3745-59 (40 CFR Part 268), or if the waste is not a "listed waste" per step 2 above, then determine if the waste is a "characteristic waste" as identified in OAC 3745-51-20 through 3745-51-24 (Subpart C of 40 CFR Part 261), by either (a) testing the waste using appropriate methods, or (b) applying knowledge of the hazardous characteristic of the waste in light of the materials or processes used ("process knowledge").				Per the RODs, pertinent only to the following areas: In OU2: approx. 300 cubic yards of lead-containing soil in the South Field Firing Range. In OU5: 1) Abandoned sump west of Pilot Plant; 2) Area between KC-2 Warehouse and RR tracks; 3) Trap Range; 4) Paddy's Run streambank fill materials west of OU4's Silos 1-4; 5) Scrap Metal Pile area; and 6) Area north of maintenance building.	Sections 7.4 (@ p. 7-5), 9.1 (@ p. 9-2), and 10.2.2 (@ p. 10-4) of the OU2 ROD; Section 9.1.1 (@ p. 9-6) and Table 9-1 of the OU5 ROD

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Interim [Status Hazardous Waste Facility] Standards —General Provisions, General Provisions OAC 3745-65-13 through -16 [Interim Status Hazardous Waste Facility Standards, Subpart B—General Facility Standards 40 CFR §§265.13 through .16]	Owners/operators of a facility must obtain chemical and physical analyses of a representative sample of each hazardous or nonhazardous waste to be treated, stored or disposed of at the facility prior to treatment, storage or disposal. At a minimum, the analysis must contain all the information which must be known to treat, store or dispose of the waste, and may include using existing published or documented data on the waste or on waste generated from similar processes ("process knowledge") [OAC 3745-65-13].	√	R&A	R&A	Pertinent to management of hazardous waste.	Following sections of the Sitewide Excavation Plan: 3.3.2 Impacted Materials Handling and Tracking 4.0 Location-Specific Excavation Approaches F.5 Excavated Material Management
	The facility owner/operator must prevent the unknowing entry, and minimize the possibility of unauthorized entry, to the active portion of the facility unless certain conditions apply [OAC 3745-65-14].				Controls which limit access to the FEMP will remain in place throughout remediation activities.	F.2.1 Establishing Excavation Boundaries and Access Controls
	The facility operator must maintain and inspect all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing human health hazards. The frequency of inspection may vary by item, and should be based on the rate of possible deterioration of the equipment/item and the probability of an environmental or human health incident if the deterioration, malfunction, or operator error goes undetected [OAC 3745-65-15]. The facility operator must train personnel for procedures relevant to the positions in which they are employed [OAC 3745-65-16].					F.8 Remediation Maintenance Activities
Hazardous Waste Facility Environmental Impact ORC 3734.05(D)(6)(c)	A hazardous waste facility installation and operation permit shall not be approved unless it is proven that the facility represents the minimum adverse environmental impact, considering the state of available technology, the nature and economics of various alternatives and other pertinent considerations	√	Appl	√	**NOTE:** Incorrectly cited in RODs as OAC 3745.05(D)(6)(c).	Appendix H of OU2 FS, Appendix J of OU5 FS, and Appendix J of OU3 RI/FS.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Hazardous Waste Facility Minimum Risk ORC 3734.05(D)(6)(d)	A hazardous waste facility installation and operation permit shall not be approved unless it is proven that the facility represents the minimum risk of all the following: 1) contamination of groundwater and surface water; 2) fires or explosions from treatment, storage, or disposal methods; 3) accidents during transportation; 4) impact to public health and safety; 5) air pollution; and 6) soil contamination.	√	Appl	√	**NOTE:** Incorrectly cited in RODs as OAC 3745.05(D)(6)(d).	OU2, OU5, and OU3 FS Reports and RODs. Also, see preceding.
Interim [Status Hazardous Waste Facility] Standards—General Provisions, Preparedness and Prevention OAC 3745-65-31 through -35, and -37 [Interim Status Hazardous Waste Facility Standards, Subpart C—Preparedness and Prevention 40 CFR §§265.31 through .35, and .37]	TSD facility operators must design, construct, maintain and operate facilities to minimize the possibility of fire, explosion or any unplanned sudden or non-sudden release of hazardous waste to air, soil, or surface water which might threaten human health or the environment.	√	R&A	R&A		See two preceding entries. For waste that is dispositioned for off-site disposal, see the Operable Unit 1 Design Criteria Package.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Interim [Status Hazardous Waste Facility] Standards—General Provisions, Contingency Plan and Emergency Procedures OAC 3745-65-51, -52, -55 and -56 [Interim Status Hazardous Waste Facility Standards, Subpart D—Contingency Plan and Emergency Procedures 40 CFR §265.51, .52, .55 and .56]	Each facility operator must have a contingency plan designed to minimize hazards to human health and the environment due to fires, explosions, or any unplanned releases of hazardous waste constituents to air, soil or surface/groundwater.	√	R&A	R&A	Pertinent to on-site facilities that treat, store, or dispose of hazardous waste.	FEMP Emergency Plan (PL-3020); all HWMUs identified in Table 2-1 of the Sitewide Excavation Plan (and the subset identified previously in this table) are addressed in Section G: Contingency Plan of the RCRA Part B Permit Application. Also, see three preceding entries. For waste that is dispositioned for off-site disposal, see the Operable Unit 1 Design Criteria Package.
Hazardous Waste Incinerators [and Miscellaneous Units], Environmental Performance Standards OAC 3745-57-91 and -92 [Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subpart X—Miscellaneous Units, 40 CFR §§264.601 through .603]	Prevention of any release that may have adverse effects on human health or the environment includes, but is not limited to: A. Migration of waste constituents in the groundwater or subsurface environment. B. Migration of waste constituents in surface water, or wetlands or on the soil surface. C. Migration of waste constituents in the air. Monitoring, tests, analytical data, inspections, response, and reporting procedures and frequencies must ensure compliance with pertinent portions of the OAC.	√	R&A	√	Pertinent to on-site facilities that treat, store, or dispose of hazardous waste in miscellaneous units unless the CAMU Rule is applied.	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Radioactive Waste Management DOE Order 5820.2A Chapter III (3)(d)	Low-level waste shall be characterized with sufficient accuracy to permit proper segregation, treatment, storage, and disposal. This characterization shall ensure that, upon generation after processing, the actual physical and chemical characteristics and major radionuclide content are recorded and known during all stages of the waste management process. Waste characterization data shall be recorded on a waste manifest and shall include: • the physical and chemical characteristics of the waste; • volume of the waste (total of waste and any solidification or absorbent media); • weight of the waste (total of waste and any solidification or absorbent media); • major radionuclides and their concentrations; and • packaging date, package weight, and external volume.	TBC	√	TBC	The CERCLA RI/FS process established the nature and extent of contamination at the FEMP. During excavation, monitoring will be performed in accordance with of the Sitewide Excavation Plan and individual IRDPs, and results will be documented in order to determine if impacted material meets the OSDF WAC or off-site WAC. These sources of characterization information (RI/FS sampling, pre-design investigations, FRL attainment, WAC attainment) will provide the required manifest information.	Addressed throughout the CERCLA RI/FS and selection of remedy process, culminated in the OU2, OU5 and OU3 RODs; OSDF Impacted Materials Placement Plan; following section of the Sitewide Excavation Plan: 3.3.2 Impacted Materials Handling and Tracking

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Waste Treatment DOE Order 5820.2A Chapter III (3)(f)	Waste treatment techniques such as incineration, shredding, and compaction to reduce volume and provide more stable waste forms shall be implemented as necessary to meet performance requirements. Use of waste treatment techniques to increase the life of the disposal facility and improve the long-term facility performance, by improved site stability and reduction of infiltrating water, is required to the extent it is cost effective. The development of large scale waste treatment facilities shall be supported by the appropriate National Environmental Policy Act documentation. Operation of waste treatment facilities shall be supported by adequate documentation.	TBC	TBC	TBC	Based upon CERCLA RI/FS data, the majority of the impacted material from OU2, OU5 and OU3 will meet the OSDF WAC and thus the performance objectives of the OSDF and DOE Order 5820.2A without treatment. This has been demonstrated through the modeling performed in the FSs to establish the OSDF WACs. Two categories of impacted materials may need to be treated before disposal. Lead-contaminated trap range soil, if toxicity characteristic hazardous, will be treated to the extent necessary to remove the toxicity characteristic that causes it to be regulated as hazardous. Physical sizing snd treatment as per the OSDF Impacted Material Placement Plan will be conducted as needed on debris for proper waste placement and stability within the OSDF.	Addressed throughout the CERCLA RI/FS and selection of remedy process, culminated in the OU2, OU5 and OU3 RODs; OSDF Impacted Materials Placement Plan; following sections of the Sitewide Excavation Plan: 1.3.2.7 RCRA Characteristic Waste Disposal 2.1.1.3 Characteristically Hazardous Waste 3.3.2 Impacted Materials Handling and Tracking F.5 Excavated Material Management

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Radioactive Waste Management DOE Order 5820.2A Chapter III (3)(g)	The volume of waste and number of shipments of low-level wastes shall be minimized and the shipments will be conducted based on plans developed by field organizations. Generators shall provide an annual forecast in the third quarter of the fiscal year to the field organizations managing the off-site disposal facility to which the waste is to be shipped. Generators must receive advance approval from the receiving facility and shall certify prior to shipment that waste meets the receiving facility waste acceptance criteria. The certification program shall be auditable and able to withstand independent review.	TBC	TBC	TBC	The volume of impacted material to be disposed on-site in the OSDF will be minimized through a number of programs. First, extensive sampling has been performed during the CERCLA RI/FS process and the extent of excavation has been established using this data. Combined with the sampling/monitoring that will be performed during excavation in accordance with Section 3.3 of the Sitewide Excavation Plan and individual IRDPs, this will confirm that only impacted materials are excavated and sent to disposal. Compliance with the FEMP Pollution Prevention and Waste Minimization Awareness Plan will minimize the amount of low-level waste (i.e., equipment and personal protective equipment) generated during remediation.	FEMP Pollution Prevention and Waste Minimization Awareness Plan; also see preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Control of Residual Radioactive Material DOE Order 5400.5 Chapter IV (6)(b) 10 CFR Part 834 (PROPOSED)	Interim storage must provide: 1) Control and stabilization features shall be designed to provide, to the extent reasonably achievable, an effective life of 50 years with a minimum life of at least 25 years. 2) Controls shall be designed such that radon-222 concentrations in the atmosphere above facility surfaces or openings in addition to background levels, will not exceed: (a) 100 pCi/L at any given point; (b) An annual average concentration of 30 pCi/L over the facility site; and (c) An annual average concentration of 3 pCi/L at or above any location outside the facility site. (d) Flux rates from the storage of radon producing wastes shall not exceed 20 pCi/m^2/sec, as required by 40 CFR Part 61.	√	TBC		The selected remedies are for a permanent remedy, not for interim storage; any short-term management of impacted material to be employed is to facilitate the permanent remedy.	Addressed through the approved selected remedy in the OU2 and OU5 RODs, associated remedial design documents (i.e., IRDPs).
	3) Controls shall be designed such that concentrations of radionuclides in the groundwater and quantities of residual radioactive material will not exceed applicable federal or state standards.					Section 5.0 of the Sitewide Excavation Plan, for environmental controls to be implemented during remediation.
	4) Access to a property and use of on-site material contaminated by residual radioactive material should be controlled through appropriate administrative and physical controls such as those described in 40 CFR Part 192. These control features should be designed to provide, to the extent reasonable, an effective life of at least 25 years.					Section 3.0 and Appendix F of the Sitewide Excavation Plan and IRDPs, for access controls to be implemented during remediation.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs)
(continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
MANAGEMENT OF LOW-LEVEL RADIOACTIVE MATERIAL						
Low-level Radioactive Waste Generation DOE Order 5820.2A Chapter III (3)(c)	Technical and administrative controls shall be directed to reducing the gross volume of waste generated and/or the amount of radioactivity requiring disposal. Waste reduction efforts shall include consideration of process modification, process optimization, materials substitution, and decontamination. All DOE low-level waste generators shall establish auditable programs to assure that the amount of low-level waste generated and/or shipped for disposal is minimized. Each DOE low-level waste generator shall separate uncontaminated waste from low-level waste to facilitate cost-effective treatment and disposal. Each DOE low-level waste generator preparing a design for a new process or process change shall incorporate principles into the design that will minimize the generation of low-level waste.	TBC	TBC	TBC	Implementation of the FEMP Pollution Prevention and Waste Minimization Awareness Plan will confirm that all newly generated waste is minimized during remediation. Additionally, excavation controls such as rapid test methodology and additional laboratory sampling will be implemented to confirm that only impacted material with contamination that is potentially above the FRLs is being excavated and sent to disposal. Physical sampling of the impacted materials and/or rapid test method methodology will also confirm that only material that exceeds the OSDF WAC is sent offsite for disposal.	Addressed throughout the CERCLA RI/FS and selection of remedy process, culminated in the OU2, OU5 and OU3 RODs; also, FEMP Pollution Prevention and Waste Minimization Awareness Plan.
MANAGEMENT OF HAZARDOUS REMEDIATION WASTE						
Identification and Listing of Hazardous Waste, Residues of Hazardous Waste in Empty Containers OAC 3745-51-07(A) &(B) [Identification and Listing of Hazardous Waste, Subpart A—General, Residues of Hazardous Waste in Empty Containers 40 CFR §261.7]	Any hazardous waste remaining in either an empty container or an inner liner removed from an empty container is not subject to regulation under 40 CFR Parts 261 through 265 (RCRA requirements). A container is empty if: 1) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container (e.g., pouring, pumping, and aspirating); and 2) No more than 2.5 cm (1 inch) of residue remains on bottom of the container or inner liner; or 3) No more than 3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 110 gal. in size, or no more than 0.3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 110 gal. in size.	√	R&A	Appl	Pertinent when containerizing: soil contaminated by RCRA waste; any treatment residues exhibiting RCRA characteristics including advanced wastewater treatment (AWWT) sludges and soil decontamination residues.	Following sections of the Sitewide Excavation Plan: 2.5.8 Special Materials 3.3.2.2 Special Materials App F Implementation of Construction

PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	MANAGEMENT OF HAZARDOUS REMEDIATION WASTE, continued					
Closure and Post-Closure Under Interim Standards, Condition of Containers OAC 3745-66-71 Compatibility of Containers OAC 3745-66-72 Management of Containers OAC 3745-66-73 Inspections OAC 3745-66-74 Special Requirements for Ignitable or Reactive Waste OAC 3745-66-76 Special Requirements for Incompatible Wastes OAC 3745-66-77 [Interim Status Standards, Subpart I—Use & Management of Containers, 40 CFR §§265.171 through .174, .176 and .177]	If a container holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects) or begins to leak, the owner or operator must transfer the hazardous waste from this container to a container that is in good condition or manage the waste in some other way that complies with this requirement.	√	R&A	Appl	Pertinent to handling containers holding environmental media contaminated with RCRA waste.	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	MANAGEMENT OF HAZARDOUS REMEDIATION WASTE, continued					
[New Facilities] Corrective Action, Closure and Post-Closure Requirements Containment OAC 3745-55-75 [Interim Status Hazardous Waste Facility Standards, Subpart I—Use & Management of Containers 40 CFR §§265.175(a) through (c)]	A containment system for RCRA container storage areas must be designed and operated to provide: 1) A sufficiently impervious base, which is sloped to collect any leaking liquids. 2) Sufficient capacity to contain liquids. 3) Prevention of run-on into the containment system. 4) A sump to prevent overflow of the collection system. Storage areas for containers holding only wastes that do not contain free liquids need not have a containment system, provided that: 1) The storage area is sloped or is otherwise designed and operated to drain and remove liquid resulting from precipitation, or 2) The containers are elevated or are otherwise protected from contact with accumulated liquid.	√	R&A	Appl	Pertinent to handling soil contaminated with RCRA listed or characteristic hazardous waste. A Part B Permit Application for RCRA storage has been submitted to the OEPA.	See preceding.
[New Facilities] Surface Impoundments, Waste Piles, and Tanks [Waste Piles] Design and Operating Requirements OAC 3745-56-51(A) through (F)	A waste pile used to store or treat hazardous waste must have: 1) A liner that is designed, constructed, and installed to prevent any migration of waste out of the pile into the adjacent subsurface soil or groundwater or surface water at any time during the active life (including the closure period) of the waste pile, and 2) A leachate collection and removal system immediately above the liner that is designed, constructed, maintained, and operated to collect and remove leachate from the pile.	√	R&A	√	Pertinent to on-site hazardous waste piles used for longer than 90 days unless the CAMU Rule is applied.	Addressed through remedial design documents (IRDPs).
	The owner/operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-yr storm and manage a runoff management system to collect and control at least the water volume resulting from a 24-hr, 25-yr storm.	√	R&A	√		
	If the pile contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the pile to control wind dispersal.	√	R&A	√		FEMP Fugitive Dust Control BAT Determination, Fugitive Dust Control Requirements (RM-0047), and Section 5.1.2.2 and Appendix F of the Sitewide Excavation Plan

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Monitoring and Inspection OAC 3745-56-54(A) and (B)	During construction or installation, liners and cover systems must be inspected for uniformity, damage, and imperfections.	√	R&A	√		
	Collection and holding facilities associated with run-on and runoff control system must be inspected weekly and be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.	√	R&A	√		FEMP Stormwater Pollution Prevention Plan (RM-0039), and Appendix F of the Sitewide Excavation Plan
Special Requirements for Ignitable or Reactive Waste OAC 3745-56-56(A) and (B) Special Requirements for Incompatible Wastes OAC 3745-56-57(A), (B) and (C) [Subpart L—Waste Piles, 40 CFR §§264.251 through .259]	Ignitable, reactive, or incompatible waste must not be added to a waste pile, unless specified in OAC 3745-56-56(A) and (B) or 57(A), (B) and (C).	√	R&A	√	The CERCLA RIs did not find evidence of ignitive or reactive material on-site. Impacted and non-impacted materials management will be segregated and managed in separate piles, based upon intended disposition (waste acceptance criteria).	Following sections of the Sitewide Excavation Plan: 3.3.2 Impacted Materials Handling and Tracking 4.0 Location-Specific Excavation Approaches F.5 Excavated Material Management
Temporary Units Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subpart S- 40 CFR §264.553 (a), (b) (58 FR 865829, February 16, 1993)	For temporary tanks and container storage areas used for treatment or storage of remediation wastes during remedial activities, the Regional Administrator may determine that a design, operating, or closure standard applicable to such units may be replaced by alternative requirements which are protective of human health and the environment. Any temporary unit to which alternative requirements are applied shall be: • located within the facility boundary; and • used solely for treatment or storage of remediation wastes.	R&A	√	R&A	Pertinent to short-term management/storage of impacted materials during the CERCLA soil remediation activities.	Appendix F of the Sitewide Excavation Plan

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	MANAGEMENT OF HAZARDOUS REMEDIATION WASTE, continued					
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subpart DD—Containment Building 40 CFR §§264.1100 through .1102 57 FR 37194 (August 18, 1992)	The owner or operator is not subject to the definition of land disposal in RCRA Section 3004(k) provided that the unit: 1) Is a completely enclosed, self-supporting structure that is designed and constructed of synthetic materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit, and to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes to which they are exposed, climatic conditions, and the stresses of daily operation, including the movement of heavy equipment within the unit and contact of such equipment with containment walls; 2) Has a primary barrier for management of solids, in addition to a liquid collection system and secondary containment for management of liquids. 3) Has controls sufficient to prevent fugitive dust emissions to meet the no visible emission standard in Sec. 264.1101(c)(1)(iv); and 4) Is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel or equipment. At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components, contaminated subsoil, and structures and equipment contaminated with waste and leachate, and handle them as a hazardous waste.	√	R&A	R&A	Pertinent to excavated RCRA hazardous soil and sediment that may require short-term management/ storage during the CERCLA soil remediation activities. NO CONTAINMENT BUILDINGS ARE ANTICIPATED.	Following sections of the Sitewide Excavation Plan: 3.3.2 Impacted Materials Handling and Tracking 4.0 Location-Specific Excavation Approaches F.5 Excavated Material Management

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	MANAGEMENT OF HAZARDOUS REMEDIATION WASTE, continued					
Procedures for Planning and Implementing Offsite Response Actions ("The CERCLA Offsite Rule") 40 CFR §300.400	Materials from remediation of a CERCLA site ("CERCLA waste") may only be transferred to offsite facilities that are in compliance with Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), or other applicable federal and state requirements. Only U.S. EPA has the authority to determine whether the facility in question meets the acceptability criteria and is acceptable for receiving CERCLA waste from offsite. A determination of acceptability for a potential receiving facility is to be made in advance (prior to initiating transportation offsite, and optimally prior to making offsite treatment/ storage/disposal contract arrangements). Materials covered under this rule ("CERCLA waste") are any hazardous substance, pollutant, or contaminant as defined under CERCLA sections 101(14) and 101(33). Samples of waste sent to a laboratory for characterization are exempt from the rule, as are certain treatability study waste. The receiving facility must meet compliance and release criteria presented therein. Facility is defined as the receiving unit(s) that directly stores, treats, or disposes of the CERCLA waste. Non-receiving units at the facility need not be in compliance in order for the U.S. EPA to determine that the receiving unit meets acceptance criteria. U.S. EPA may deem a facility acceptable even if certain minor violations have occurred at the facility. If a facility does not meet the criteria for receiving CERCLA wastes, the rule presents notification, determination, appeal/review and reinstatement procedures.	√	√	Appl	Pertinent to preparation of materials for off-site disposition.	Operable Unit 1 Design Criteria Package, and following sections of the Sitewide Excavation Plan: 2.5.10 Off-Site Shipments F.5.2 Off-Site Disposal
[Hazardous Waste] Generator Standards OAC 3745-52-20 through -23, and -30 through -33 [40 CFR §§262.20 through .23, and .30 through .33]	Before transporting hazardous waste or offering hazardous waste for transportation off-site ("pre-transport"), for either treatment or disposal, general requirements for the generator, require a manifest [OAC 3745-52-20 through -23], in accordance with the requirements specified therein. Pre-transport requirements also include appropriate packaging [OAC 3745-52-30], labeling [OAC 3745-52-31], marking [OAC 3745-52-32], and placarding [OAC 3745-52-33], in accordance with the requirements specified therein.	√	Appl	Appl	Pertinent to preparation of RCRA hazardous waste for off-site treatment and/or disposal.	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	MANAGEMENT OF HAZARDOUS REMEDIATION WASTE, continued					
Implementation of the United Nations Recommendations, International Maritime Dangerous Goods Code, and the International Civil Aviation Organization's Technical Instructions 59 FR 67390 (December 29, 1994) as amended by 60 FR 26796 (May 18, 1995)	These rules (final rule was effective October 1, 1995) comprehensively revise the Hazardous Materials Regulations (HMR), 49 CFR Parts 171-173, 177, and 178, with respect to hazard communication, classification, and packaging requirements based on United Nations recommendations.	√	√	Appl	These Hazardous Materials Regulations are requirements embedded in both the state (OAC) and federal (CFR) regulations in both the generator standards (preceding entry) and the transporter standards (subsequent entry).	See preceding generator standards entry and subsequent transporter standards entry.
[Hazardous Waste] Land Disposal Restrictions OAC 3745-59 [Land Disposal Restrictions, Subpart D—Treatment Standards 40 CFR §§268.40 through .44]	A restricted hazardous waste may be land disposed only if: 1) An extract of the waste or of the treatment residue of the waste does not exceed the value shown in 40 CFR §268.41. 2) It is treated using a technology specified in 40 CFR §268.42(a) or an equivalent treatment method. 3) The constituent concentrations in the waste or treatment residue of the waste do not exceed the value shown in 40 CFR §268.43.	√	Appl	Appl	Not applicable to on-property disposal within a CAMU under the CAMU Rule as invoked under the OU5 ROD. Applicable to those RCRA hazardous wastes that will be disposed of off-site.	See three preceding entries.
Land Disposal Restrictions, Subpart D—Treatment Standards, Treatment Standards Expressed as Concentrations in Waste Extract 40 CFR §268.41	The maximum concentration of lead (5.0 mg/L) may not be exceeded whether it is the extract of a waste or waste treatment residual.	R&A	Appl		Not applicable to on-property disposal within a CAMU under the CAMU Rule as invoked under the OU5 ROD. Applicable to those RCRA hazardous wastes that will be disposed of off-site.	See four preceding entries.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	MANAGEMENT OF HAZARDOUS REMEDIATION WASTE, continued					
Land Disposal Restrictions, Subpart D—Treatment Standards, Contaminated Debris 40 CFR §268.45	Hazardous debris must be treated before land disposal unless the EPA determines that the debris is no longer contaminated with hazardous waste or the debris is treated to the waste-specific treatment standard for the waste contaminating the debris. Provided the debris does not exhibit a RCRA characteristic it is not subject to regulation under 40 CFR 260, 261 to 266, 268, or 270 if: 1) The hazardous debris has been treated using one of the required extraction or destruction technologies specified in 40 CFR §268.45; or 2) The debris, considering the extent of contamination, is determined to no longer be contaminated with hazardous waste.	√	Appl	Appl	Not applicable to on-property disposal within a CAMU under the CAMU Rule as invoked under the OU5 ROD. Applicable to those RCRA hazardous wastes that will be disposed of off-site.	See five preceding entries.
[Hazardous Waste] Transporter Standards OAC 3745-53-20 through -22, -30 and -31 [40 CFR §§263.20 through .22, .30 and .31]	General requirements for the transporter during transportation of hazardous waste for off-site treatment and/or disposal require acceptance and handling of hazardous waste and use of the manifest system [OAC 3745-53-20], compliance with the manifest [OAC 3745-53-21], and recordkeeping [OAC 3745-53-22], in accordance with the requirements specified therein. Appropriate response actions must be taken for any hazardous waste discharge during transportation [OAC 3745-53-30 and -31], in accordance with the requirements specified therein.	√	Appl	Appl	Pertinent to transportation of RCRA hazardous wastes (and mixed wastes) for off-site treatment and/or disposal.	See six preceding entries.
	MANAGEMENT OF PCB-TAINTED MATERIAL					
Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution In Commerce, And Use Prohibitions, Subpart D—Storage and Disposal, Disposal Requirements 40 CFR §761.60(a)(4)	Any nonliquid PCBs at concentrations 50 ppm or greater in the form of contaminated soil, rags, or other debris shall be disposed of in an incinerator which complies with 40 CFR §761.70, or in a chemical waste landfill which complies with 40 CFR §761.75.		Appl	Appl	Pertinent if soil or other material containing PCBs above 50 ppm is excavated. PCBs were detected in soil beneath the Fire Training Facility.	Following sections of the Sitewide Excavation Plan: 3.3.2 Impacted Materials Handling and Tracking 4.0 Location-Specific Excavation Approaches F.5 Excavated Material Management

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
MANAGEMENT OF PCB-TAINTED MATERIAL, continued						
Subpart D—[PCB] Storage and Disposal, Disposal Requirements 40 CFR §761.60(e)	Any person who is required to incinerate PCBs or PCB items under this subpart and who can demonstrate that an alternate method of destroying PCBs or PCB items can achieve a level of performance equivalent to the requirements under 40 CFR §761.70 may submit a written request to either the Regional Administrator or the Director, Exposure Evaluation Division, for an exemption from the incineration requirements of 40 CFR §§ 761.70 or 761.60. The applicant must show that the alternate method of destroying PCBs will not present an unreasonable risk of injury to health or the environment.		Appl	Appl	Pertinent only if PCB contaminated soil is greater than 50 ppm and is treated on-property using a method besides incineration. DOE neither currently anticipates any such material nor on-property treatment for any such material under the soil remediation projects.	See preceding entry, plus following sections of the Sitewide Excavation Plan: 2.5.10 Off-Site Shipments F.5.2 Off-Site Disposal
Subpart D—[PCB] Storage and Disposal, Storage for Disposal 40 CFR §761.65	This section applies to the design of storage areas to be used for later disposal of PCBs at concentrations of 50 ppm or greater.		Appl	Appl	Pertinent to storage of PCB-contaminated material at 50 ppm or greater. DOE does not currently anticipate any such material under the soil remediation projects.	See two preceding entries.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
POST-CLOSURE						
	DESCRIPTION OF POST-CLOSURE CARE					
[New Facilities Hazardous Waste] Surface Impoundments, Waste Piles, and Tanks, [Waste Piles] Post-Closure OAC 3745-56-58(B) [Subpart L—Waste Piles, 40 CFR §§264.251 through .259]	If, after removing or decontaminating all residues and making all reasonable effort to effect removal or decontamination of contaminated components, subsoil, structures and equipment, the owner/operator finds that not all contaminated subsoil can be practically removed or decontaminated, he must close the unit/facility and perform post-closure care in accordance with OAC 3745-57-10. NOTE: If clean (or risk-based) closure is performed, then post-closure care is not required.	√	R&A		Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	Currently addressed in the OSDF Post-closure Care and Inspection Plan (20100-PL-010), which notes in its Prologue that it can be revised at a later date to expand the scope of coverage to encompass the entire FEMP site as needed. Will also be addressed in the Certification Report and Remedial Action Report — see following sections of the Sitewide Excavation Plan: 1.4.2 Related Documents 3.4.6 Certification Report 7.3 Certification Report 7.4 Other Related Future Documents
[New Facilities Hazardous Waste] Incinerators [and Miscellaneous Units], [Miscellaneous Units] Environmental Performance Standards OAC 3745-57-93 [Subpart X—Miscellaneous Units, 40 CFR §§264.601 through .603]	If a treatment or storage miscellaneous unit has contaminated soil or groundwater that cannot be completely removed or decontaminated during closure, the unit must also meet the requirements of OAC 3745-57-91 during the post-closure care period. The post-closure plan under OAC 3745-55-18 must specify the procedures that will be used to satisfy this requirement. A miscellaneous unit that is a disposal unit must be maintained in a manner that complies with OAC 3745-57-91 during the post-closure care period. NOTE: If clean (or risk-based) closure is performed, then post-closure care is not required.	√	R&A		Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	See preceding.

PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DESCRIPTION OF POST-CLOSURE CARE, continued					
Closure and Post-Closure Under Interim Standards, Post-closure Care and Use of Property OAC 3745-66-17(A) [40 CFR §265.117(a)(2)]	Post-closure care of hazardous waste management units must begin after completion of closure of the unit and continue for 30 years after that date unless shortened by the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection] in accordance with OAC 3745-66-18(G) (40 CFR §117(a)(2)). **NOTE:** If clean (or risk-based) closure is performed, then post-closure care is not required.	√	Appl		**NOTE:** Identified in the OU5 ROD as applicable only to existing hazardous waste management units (HWMUs); also cited in RCRA/CERCLA Integrated Closure DF&O @ V.1. Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	See preceding.
Closure and Post-Closure Under Interim Standards, Post-closure Care and Use of Property OAC 3745-66-17(A)(1) [40 CFR §265.117(a)(1)]	Post-closure care...must consist of at least the following: • monitoring and reporting; and • maintenance and monitoring of waste containment systems. **NOTE:** If clean (or risk-based) closure is performed, then post-closure care is not required.	√	√	√	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1. Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	See preceding.
Closure and Post-Closure Under Interim Standards, Post-closure Plan; Amendment of Plan OAC 3745-66-18(A)&(C)	The owner of a hazardous waste disposal unit shall have a written post-closure plan, which shall identify the activities that will be carried on after closure of each unit and the frequency of those activities, and include at least: • a description of the planned monitoring activities and frequencies at which they will be performed; • a description of the planned maintenance activities and frequencies at which they will be performed, to ensure (a) the integrity of the cap and final cover or other containment systems, and (b) the functioning of the monitoring equipment; and • the name, address and telephone number of the person or office to contact about the hazardous waste disposal unit or facility during the post-closure period. **NOTE:** If clean (or risk-based) closure is performed, then post-closure care is not required.	√	√	√	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1. Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	MODIFICATIONS TO POST-CLOSURE CARE PLAN OR PERIOD					
Closure and Post-Closure Under Interim Standards, Post-closure Plan; Amendment of Plan OAC 3745-66-18(D)	The owner may amend the post-closure plan any time during the active life of the facility or during the post-closure period. **NOTE:** If clean (or risk-based) closure is performed, then post-closure care is not required.	√	√	√	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1. Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	Currently addressed in the OSDF Post-closure Care and Inspection Plan (20100-PL-010), which notes in its Prologue that it can be revised at a later date to expand the scope of coverage to encompass the entire FEMP site as needed.
Closure and Post-Closure Under Interim Standards, Post-closure Plan; Amendment of Plan OAC 3745-66-18(G)	The post-closure plan and length of the post-closure period may be modified any time prior to the end of the post-closure care period. A modification of the post-closure plan may include, where appropriate, the temporary suspension rather than permanent deletion of one or more post-closure care requirements. At the end of the specified period of suspension, the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection] would then determine whether the requirements should be permanently discontinued or reinstated to prevent threats to human health and the environment. **NOTE:** If clean (or risk-based) closure is performed, then post-closure care is not required.	√	√	√	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1. Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	See preceding.
	PROPERTY USE RESTRICTIONS					
Closure and Post-Closure Under Interim Standards, Post-closure Care and Use of Property OAC 3745-66-17(c) [40 CFR §265.117(c)]	Post-closure use of property on or in which hazardous waste remains after partial or final closure must never be allowed to disturb the integrity of the final cover, liner(s), or any other component of the containment system, or the function of the facility's monitoring systems, unless the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection] approves otherwise. **NOTE:** If clean (or risk-based) closure is performed, then post-closure care is not required.	√	Appl	√	**NOTE:** Identified in the OU5 ROD as applicable only to existing hazardous waste management units (HWMUs); also cited in RCRA/CERCLA Integrated Closure DF&O @ V.1. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	Currently addressed in the OSDF Post-closure Care and Inspection Plan (20100-PL-010), which notes in its Prologue that it can be revised at a later date to expand the scope of coverage to encompass the entire FEMP site as needed.
Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings Subpart A— 40 CFR §192.02(a)	Controls of residual radioactive materials from inactive uranium processing sites shall be designed to be effective for up to 1,000 years, to the extent reasonably achievable, and in any case, for at least 200 years, and provide protection of groundwater.	R&A	R&A		Most pertinent to the design and closure of the On-Site Disposal Facility.	Addressed by selected remedies of OU2 and OU5 RODs in establishment of FRLs.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	PROPERTY USE RESTRICTIONS, continued					
Long-Term Management of Residual Radioactive Material DOE Order 5400.5 Chapter IV (6)(d) 10 CFR Part 834 (PROPOSED)	Controls of residual radioactive materials from inactive uranium processing sites shall be designed to be effective for up to 1,000 years, to the extent reasonably achievable, and in any case, for at least 200 years, and provide protection of groundwater.		TBC			Addressed by selected remedies of OU2 and OU5 RODs in establishment of FRLs.
	For long-term management of uranium, thorium, and their decay products, access to a property and use of on-site materials contaminated by residual radioactive material should be controlled through appropriate administrative and physical controls such as those described in 40 CFR 192. These controls should be designed to be effective to the extent reasonable for at least 200 years.	TBC	TBC			
Control of Residual Radioactive Material Above the Guidelines DOE Order 5400.5 Chapter IV (6)	Residual radioactive material with concentrations above the generic guidelines (see chemical-specific requirements) shall be managed in accordance with Chapter II, Requirements for Radiation Protection of the Public and the Environment, and operational and control requirements.	TBC	√			See preceding.
Supplemental Limits and Exceptions for Residual Radioactive Material DOE Order 5400.5 Chapter IV (7)	If special specific property circumstances indicate that the concentration guidelines or authorized limits are not appropriate, supplemental limits or an exception may be requested to those guidelines or limits.	TBC	√			See preceding.
Release of Property DOE Order 5400.5 Chapter II (5)	Real property (land and structures), personal property, materials, and equipment shall be released if the concentration of radioactivity is within the limits of residual radioactive contamination.	TBC	√			See preceding.

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PERTINENT ARARs AND TBCs FOR REMEDIATION OF LIME SLUDGE PONDS (LSPs) (continued)

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	POST-CLOSURE NOTICE/SURVEY PLAT					
Closure and Post-Closure Under Interim Standards, Survey Plat OAC 3745-66-16	The owner shall submit -- to the local zoning authority, or the authority with jurisdiction over local land use, and to the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection] -- a survey plat, prepared and certified by a professional land surveyor, indicating the location and dimensions of landfill cells or other hazardous waste disposal units with respect to permanently surveyed benchmarks. The plat must contain a note, prominently displayed, which states the owner's obligation to restrict disturbance of the hazardous waste disposal unit in accordance with OAC 3745-66-17(C).	√	√	√	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1.	Currently addressed in the OSDF Post-closure Care and Inspection Plan (20100-PL-010), which notes in its Prologue that it can be revised at a later date to expand the scope of coverage to encompass the entire FEMP site as needed.
Closure and Post-Closure Under Interim Standards, Post-closure Notices OAC 3745-66-19(A)	The owner shall submit -- to the local zoning authority, or the authority with jurisdiction over local land use, and to the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection] -- a record of the type, location, and quantity of hazardous waste disposed of within each cell or disposal unit of the facility.	√	√	√	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1.	See preceding.
	DEED NOTATION					
Closure and Post-Closure Under Interim Standards, Post-closure Notices OAC 3745-66-19(B)	The owner shall record, in accordance with state law, a notation on the deed of the facility property, or on some other instrument which is normally examined during title search, that will notify in perpetuity the potential purchasers of the property that: • the land has been used to manage hazardous wastes; • its use is restricted under the Ohio Administrative Code closure and post-closure rules; and • a survey plat and record of the type, location, and quantity of hazardous wastes disposed of within each cell or hazardous waste unit of the facility as required by OAC 3745-66-16 and OAC 3745-66-19(A) have been filed with the local zoning authority or the authority with jurisdiction over local land use and the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection].	√	√	√	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1.	Currently addressed in the OSDF Post-closure Care and Inspection Plan (20100-PL-010), which notes in its Prologue that it can be revised at a later date to expand the scope of coverage to encompass the entire FEMP site as needed. Will also be addressed in the NRRP.
Closure and Post-Closure Under Interim Standards, Post-closure Notices OAC 3745-66-19(c)	If the owner or any subsequent owner of the land upon which a hazardous waste disposal unit was located wishes to remove hazardous wastes and hazardous waste residues in satisfaction of the criteria in OAC 3745-66-17(C), the owner may request that the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection] approve either: • the removal of the notation on the deed to the facility property or other instrument normally examined during title search; or • the addition of a notation to the deed or instrument indicating the removal of the hazardous waste.	√	√	√	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1.	See preceding.

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