

**Long-Term Surveillance and
Maintenance Plan
for the
U.S. Department of Energy
Mound, Ohio, Site**

January 2015



U.S. DEPARTMENT OF
ENERGY

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Management

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Significant Changes Summary – January 2015 update

Section	Description of Modification	Driver:/Technical Information
2.4.3	Added information on RCRA Burn Area	Document this RCRA remediation.
3.5.1	Updated information on OU-1	Included ongoing OU-1 enhanced attenuation field demonstration.
3.5.2	Modified information on OU-1 Pump-and-Treatment	Explains that the pump and treatment system has ceased operation during the field demonstration. Explains that a ROD amendment would likely be required to change remedy to monitored natural attenuation.
4.0	Updated information on property ownership	Sale of Building 100 to Dyrdek Group, Inc. States that MDC resurveyed parcels owned by MDC and City of Miamisburg and submitted changes to Montgomery County.
Table 3	Updated to match O&M Plan Table 2	
Figure 9	Updated figure, Mound Site Parcels, Buildings, and Ownership.	Reflects property ownership changes. Reflects MDC surveys and changes in parcel IDs.
References	Updated	Added OU-1 field demonstration documents. Added <i>Burn Area Certification of the RCRA Closure and Final Amended Burn Area Closure Plan</i> .
Appendix D	Added appendix, <i>Mound Site Groundwater Monitoring Wells</i>	Inserted a table that lists existing monitoring wells with DOE numbers and Ohio Department of Natural Resources (ODNR) identification numbers.

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Appendix C	Records, Freedom of Information Act (FOIA), and Privacy Act (PA) Information
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Abbreviations

AEC	U.S. Atomic Energy Commission
ANSPD	Advanced Nuclear Systems and Projects Division
AR	Administrative Record
aRc	Accelerated Remediation Company
BVA	Buried Valley Aquifer
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
CIP	Community Involvement Plan
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOJ	U.S. Department of Justice
DP	Defense Programs
EM	Office of Environmental Management
ER	Environmental Restoration
ES	Environmental Summary
FFA	Federal Facility Agreement
FOIA	Freedom of Information Act
ft	feet
GEMS	Geospatial Environmental Mapping System
HH	Hydrolysis House
IC	institutional control
IR	Information Repository
JSA	job safety analysis
LM	Office of Legacy Management
LMS	Legacy Management Support
LTS&M	long-term surveillance and maintenance
LTSP	Long-Term Surveillance Plan
MCP	Miamisburg Closure Project
MDC	Mound Development Corporation (formerly MMCIC)
MEMP	Miamisburg Environmental Management Project
MMCIC	Miamisburg Mound Community Improvement Corporation
MNA	monitored natural attenuation

msl	mean sea level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NE	Nuclear Energy
NPL	National Priorities List
NRHP	National Register of Historic Places
O&M	operations and maintenance
ODH	Ohio Department of Health
Ohio EPA	Ohio Environmental Protection Agency
OHPO	Ohio Historic Preservation Office
OMA	Office of Military Applications
ORC	Ohio Revised Code
ORISE	Oak Ridge Institute for Science and Education
OU	Operable Unit
P&T	pump-and-treatment
PA	Privacy Act
PP	Plutonium Processing
PRS	potential release site
R	Research
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RRE	Residual Risk Evaluation
SARA	Superfund Amendments and Reauthorization Act
SD	Sewage Disposal
SM	Special Metallurgical
SW	Semi Works
T	Technical
TCE	trichloroethene
USACE	U.S. Army Corps of Engineers
USC	<i>United States Code</i>
WD	Waste Disposal

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1.0 Purpose and Objective

1.1 Purpose

The *Long-Term Surveillance and Maintenance Plan for the U.S. Department of Energy Mound Ohio, Site* (LTS&M Plan) is Volume 1 of a three-volume Long-Term Surveillance Plan (LTSP). The multivolume plan explains how the U.S. Department of Energy (DOE) Office of Legacy Management (LM) will fulfill its surveillance and maintenance obligation at the DOE Mound, Ohio, Site¹ (CERCLIS ID 04935) (referred to in this document as the Mound site) to ensure that the selected remedies remain functional and effective so that conditions at the site remain protective of human health and the environment.

- Volume 1 is the LTS&M Plan, which provides background and summarizes the plans for long-term surveillance, maintenance, and monitoring of the site. It describes the activities, roles and responsibilities, and processes for changing the plan or the activities it specifies. Updates will be reviewed by regulators but will not require regulatory approval. Volume 1 replaced the *Long-Term Surveillance and Maintenance Plan for the U.S. Department of Energy Miamisburg Closure Project, Mound Site, Miamisburg, Ohio* (DOE 2005). Updates will be reviewed by regulators but will not require regulatory approval.
- Volume 2 is the *Operations and Maintenance Plan for the U.S. Department of Energy Mound, Ohio, Site* (DOE 2015b), also known as the O&M Plan, which contains the O&M and institutional control (IC) requirements developed by the DOE Office of Environmental Management (EM) and approved by the regulators and stakeholders. The activities described are required to maintain the remedies and controls for the site under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Volume 2 replaced four previous documents: the *Operations and Maintenance Plan for Implementation of Institutional Controls at the 1998 Mound Plant Property*; the *OU-1 Pump and Treatment Operation and Maintenance Plan*; the *Phase I Remedy (Monitored Natural Attenuation) Groundwater Monitoring Plan, Final*; and the *Parcel 6, 7, and 8 Remedy (Monitored Natural Attenuation) Groundwater Monitoring Plan, Final*. Except for the CERCLA overview section, updates will require regulatory approval.
- Volume 3 is the *Community Involvement Plan for the U.S. Department of Energy Mound, Ohio, Site*, (DOE 2015a), also known as the CIP, which documents how LM will ensure public involvement in post-closure activities at the Mound site. DOE will review the CIP annually and update it as necessary. Updates will be reviewed by regulators but will not require regulatory approval.

¹ The Mound site has also been called the Mound Laboratory, Mound Laboratories, Mound Plant (EPA ID OH6890008984), the USDOE Mound Plant, the Mound Facility, the USDOE Mound Facility, Miamisburg Environmental Management Project (MEMP), and Miamisburg Closure Project (MCP). LM uses Mound, Ohio, Site as the formal site identifier.

1.2 Objectives

This LTS&M Plan documents the activities and operations required to maintain and ensure the effectiveness of the selected CERCLA remedies. This plan summarizes the surveillance and maintenance plans, references other necessary plans, and summarizes background information.

EM remediated the Mound site to an industrial use standard in accordance with the requirements of CERCLA as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. DOE is responsible for the operation and maintenance of the CERCLA remedies and for any contamination from previous DOE contractor operations discovered in the future.

Because the selected CERCLA remedies allowed some residual contamination to remain, LM will ensure that the remedies continue to function and remain effective with the following oversight activities:

- Maintaining and funding all institutional systems required to implement the remedy.
- Maintaining all ICs designed to prevent exposure to residual contamination.
- Monitoring groundwater, as required by the remedy or as deemed necessary, to ensure the continued protection of the public and environment.
- Conducting periodic inspections to ensure that remedies and institutional systems continue to function as designed.

Specific surveillance and maintenance objectives are summarized in Table 1 and are further explained in Section 3.0.

1.3 Scope

This plan covers the entire “1998 Mound Plant Property,” which refers to the approximately 306 acres owned by DOE (Figure 1). The term “Mound site” used in this plan is synonymous with the term “1998 Mound Plant Property” used in other documents.

The offsite area known as Operable Unit 4 (OU-4) Miami-Erie Canal has a Record of Decision (ROD) but has no use restrictions or DOE oversight requirements. The canal was included with the listing on the National Priorities List (NPL) due to impact from operational and accidental releases from the Mound site. Information on the NPL is detailed in Section 2.4.4.1.

Contaminants were detected in the groundwater under the canal and the Community Park. In July 1995, DOE issued a Removal Action Memorandum proposing excavation of the Miami-Erie Canal to remove contaminated soils and sediments. DOE remediated the canal soil to residential-use risk levels. The regulators approved a no-action ROD (DOE 2004) for OU-4 in 2004.

1.4 Surveillance and Maintenance Objectives and Strategies

Table 1 summarizes objectives and strategies for surveillance and maintenance of the CERCLA remedies implemented at the Mound site.

ICs are an important component of the remedies selected for the Mound site. As defined by the U.S. Environmental Protection Agency (EPA), ICs are non-engineered instruments, such as

administrative and legal controls, that help to minimize the potential for exposure to contamination and/or protect the integrity of a response action.

Table 1. Summary of Surveillance and Maintenance Objectives and Strategies

Surveillance and Maintenance Objective	LM Strategies to Achieve Objective (see Section 5.0 for specifics)
Control human and environmental exposure to any remaining residual materials contained in soil or water	<ul style="list-style-type: none"> • Monitor ICs to evaluate effectiveness. • Inspect to assess IC compliance. • Monitor groundwater. • Monitor for concerns by regulators, stakeholders, and the general public. • Plan emergency response mechanisms for newly discovered residual contamination.
Control human exposure to any residual contamination in Technical (T) Building concrete flooring in specific rooms	<ul style="list-style-type: none"> • Follow Core Team guidelines in the O&M Plan, Appendix B (DOE 2015b).
Control human exposure to contaminated groundwater	<ul style="list-style-type: none"> • Maintain ICs. • Monitor groundwater quality. • Plan response mechanisms for changes in groundwater conditions to ensure protectiveness of human health.
Limit or prevent induced migration of contaminated groundwater	<ul style="list-style-type: none"> • Operate OU-1 pump-and-treatment system. • Conduct regular inspections of extraction system to determine if it is operating to design specifications. • Monitor hydraulic properties and groundwater quality in the OU-1 area. • Monitor for natural attenuation of contaminants under groundwater remedy.
Prevent loss of knowledge	<ul style="list-style-type: none"> • Comply with National Archives and Records Administration records management requirements. • Include ICs as deed restrictions in real property records, such as quitclaim deeds and environmental covenants. • Maintain the Information Repository, including the Administrative Record. • Follow the CIP to ensure public involvement. • Distribute annual IC assessment and Five-Year Review reports to interested stakeholders, site property owners, and City of Miamisburg. • Interact with regulators and stakeholders regularly. • Use local entities such as the Mound Science and Energy Museum to distribute information relating to ICs, monitoring, reporting, etc. • Make available annual IC assessment reports, annual groundwater monitoring reports, Five-Year Review reports, environmental data, and other site information on the LM public website.

2.0 Background Information on the Mound Site

2.1 Site Description

The following sections describe the Mound site and the surrounding areas. The pre-cleanup site conditions are described in the *Operable Unit 9 Site Scoping Report*, Volumes 1 through 12. Electronic versions of these documents are located on the LM public website at <http://www.lm.doe.gov/mound/Sites.aspx>.

2.1.1 Location

The Mound site is located in Miamisburg, Ohio, approximately 10 miles southwest of Dayton (Figure 1). The Great Miami River flows from northeast to southwest through Miamisburg and dominates the geography of the region surrounding the Mound site.

2.1.2 Land Use in the Area

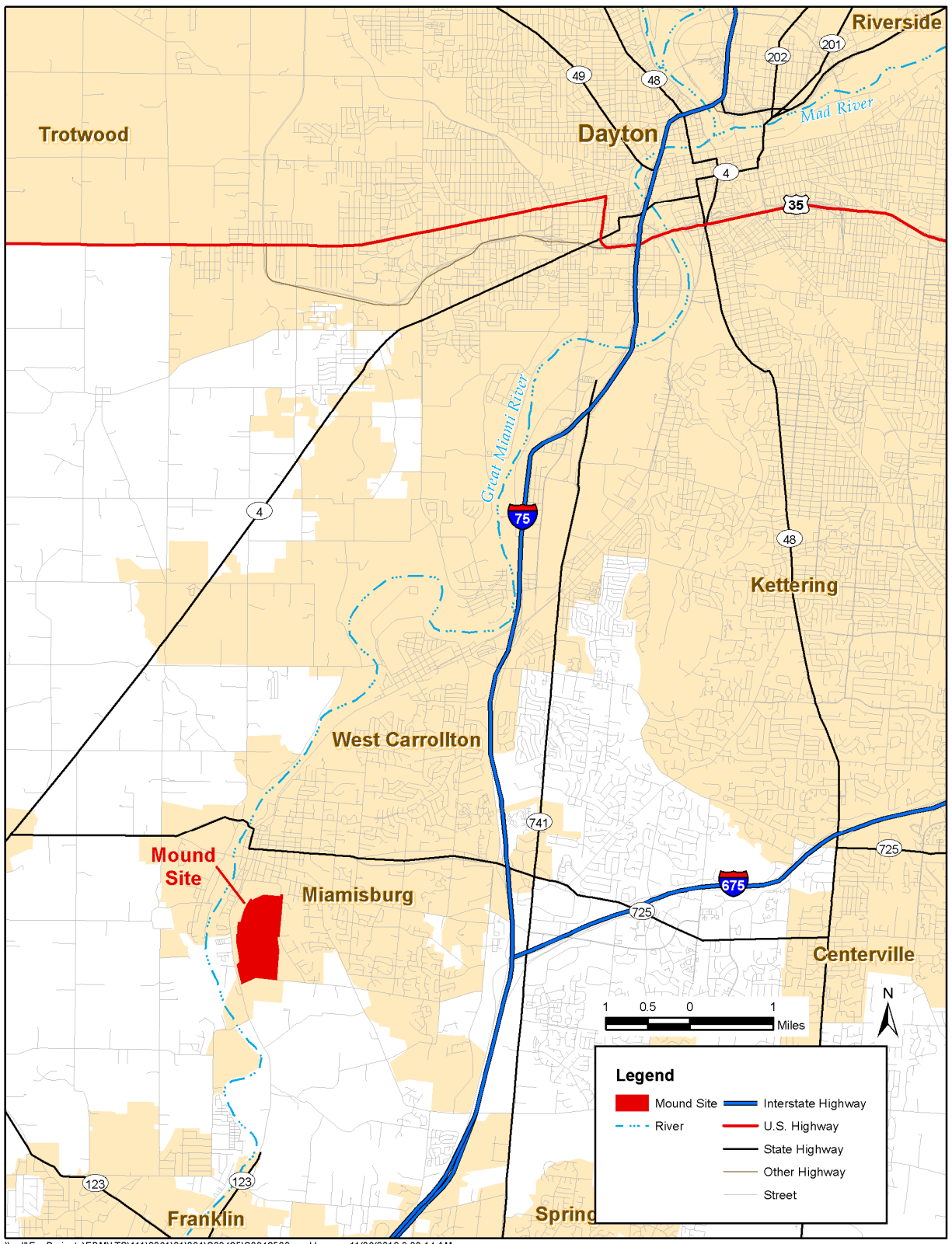
The river valley is highly industrialized, and the rest of the region is a mix of farmland, residential area, small communities, and light industry. Many city and township residences, schools, the Miamisburg downtown area, and six city parks are located within 1 mile of the Mound site.

The 2010 census shows 336,956 residents within a 10-mile radius, and 3,183,953 residents within a 50-mile radius of the Mound site. The primary agricultural crops in the area are field crops, such as corn and soybeans. Approximately 10 percent of the agricultural land is devoted to livestock.

2.1.3 Geology and Hydrogeology

The geologic record preserved in the rocks underlying the site indicates that the area has been relatively stable since the beginning of the Paleozoic era, more than 500 million years ago. There is no evidence indicating subsurface structural folding, significant stratigraphic thinning, or subsurface faulting. The bedrock consists of limestone, which is interbedded with shale layers at the site. No evidence of solution cavities or cavern development has been observed in any borings or outcrops in the Miamisburg area. The bedrock is overlain with glacial till, which exhibits some fracturing that allows infiltration of precipitation.

The aquifer system at the Mound site consists of two different hydrogeologic environments: groundwater flow through the bedrock beneath the hills, and groundwater flow within the unconsolidated glacial deposits and alluvium associated within the Buried Valley Aquifer (BVA) in the Great Miami River valley (Figure 2). The bedrock flow system is dominated by fracture flow and is not considered a highly productive aquifer. The BVA is dominated by porous flow with interbedded gravel deposits providing the major pathway for water movement. The unconsolidated deposits are Quaternary-age sediments consisting of both glacial and fluvial deposits. The BVA is a highly productive aquifer capable of yielding a significant quantity of water and is designated a sole-source aquifer.



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Figure 1. Location of the Mound Site in Miamisburg, Ohio

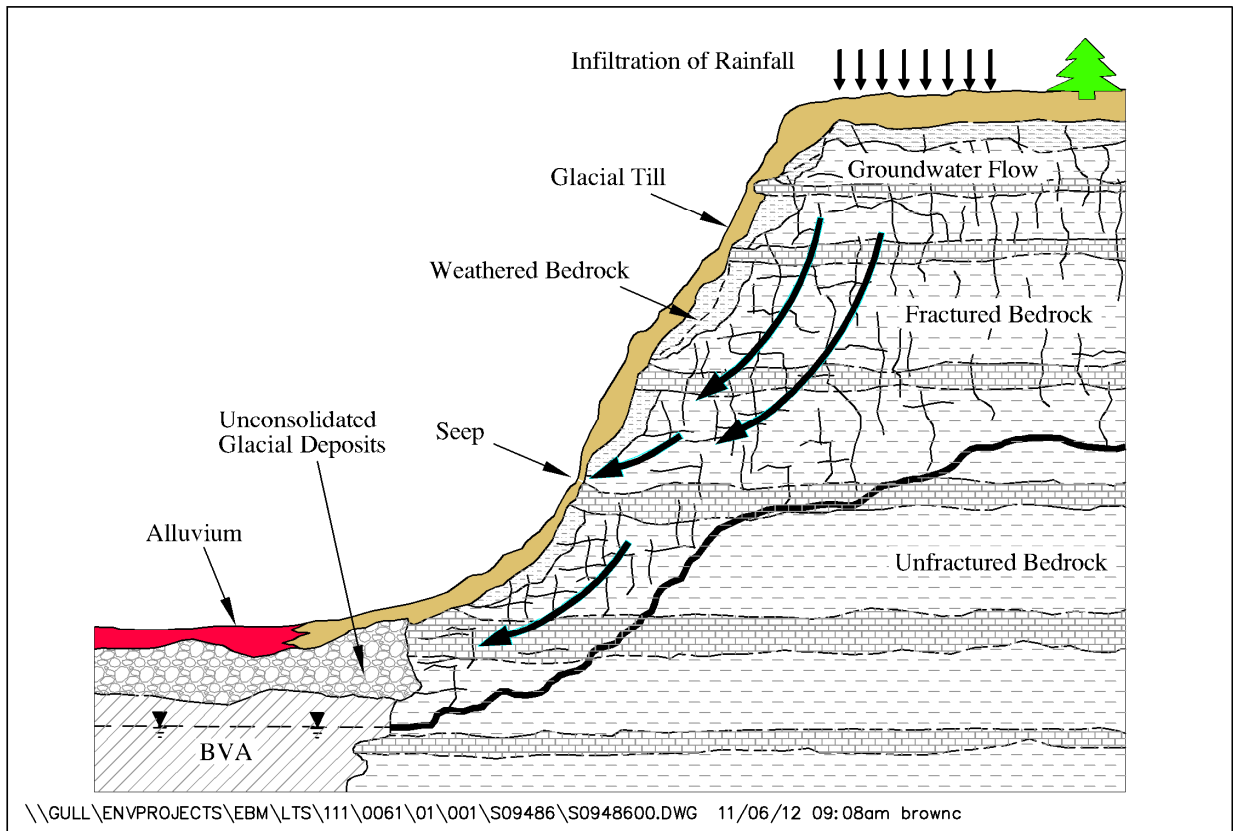


Figure 2. Generalized Groundwater Flow at the Mound Site

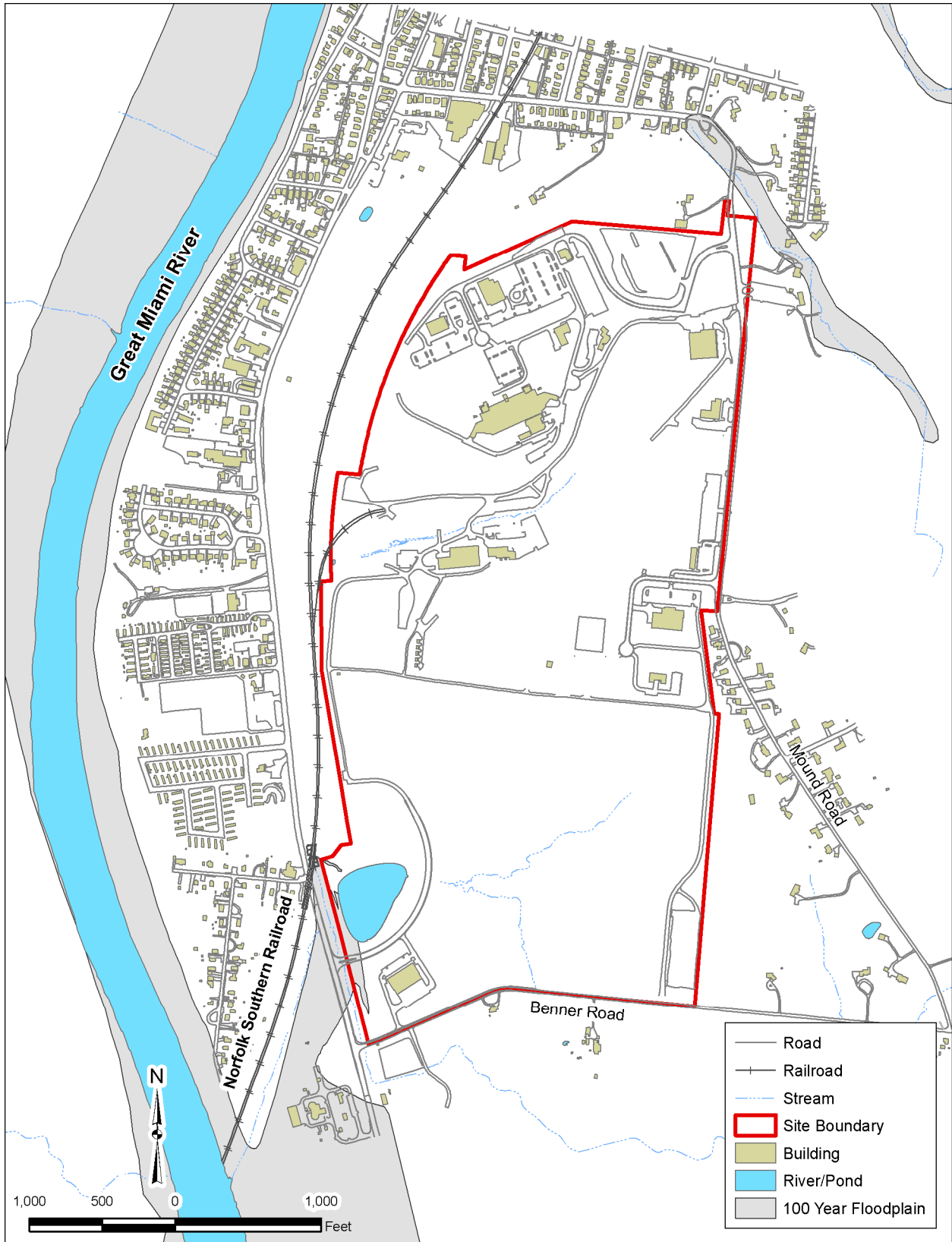
2.1.4 Climate

The climate in southwestern Ohio, including the Mound site, is moderate. The average annual precipitation rate is 33 inches per year, and winds are predominantly from the south-southwest. The mean temperature in 2011 was 53 °F with a maximum of 97 °F and a minimum of -4 °F.

2.1.5 Topography

The Mound site sits atop an elevated area overlooking the city of Miamisburg, the Great Miami River, and the river plain area to the west. To the west of the site is an abandoned section of the Miami-Erie Canal that parallels the river. An intermittent stream, referred to as the main ditch, runs through the site valley and drains to the river. Site elevations vary from 700 feet (ft) to 900 ft above mean sea level (msl); most of the site is higher than 800 ft above msl.

The Great Miami River is located approximately 1,500 ft west of the site. The typical nonflood stage of the Great Miami River is 682 ft msl. The highest floodwater levels that can be reasonably postulated for the Great Miami River basin (100-year storm event) would result in flooding to 700 ft msl. The southwestern edge of the site lies within the 100-year floodplain of the Great Miami River (Figure 3).



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Figure 3. Surface Water Features and Areas Within the 100-Year Floodplain

2.1.6 Cultural, Natural, and Historic Preservation

Threatened and endangered species, floodplains, wetlands, regulated streams, cultural resources, and historic sites at and near to the Mound site were evaluated. The following is a summary of cultural, natural, and historic preservation evaluations or activities for the Mound site:

- There are no threatened or endangered species or critical habitats at the Mound site. This has been confirmed by several agencies, including the U.S. Fish and Wildlife Service, the Ohio Department of Natural Resources, and the Dayton Museum of Natural History.
- Since all wetlands and streams on the Mound site are considered isolated waters or headwaters, disturbance of those areas is potentially permissible under the Nationwide Permit Program. Any future permitting, if necessary, will be the responsibility of the appropriate parcel owner (see Section 5.1.2).
- There are no remaining jurisdictional wetlands onsite except for the seeps. There was 0.177 acre of jurisdictional wetlands on the Mound site that comprised nine individual wetlands, mainly along the south slope of what was known as the Main Hill (Figure 4). This was confirmed by the U.S. Army Corps of Engineers (USACE), as discussed in the *Delineation of Federal Wetlands and Other Waters of the U.S. for Miamisburg Environmental Management Project* (DOE 1999f). When remediation impacted wetlands, DOE purchased credits from the Ohio Wetlands Foundation for the restoration and monitoring of wetlands at the Caesar Creek wetland mitigation site.
- The seeps were identified as regulated wetlands (DOE 1999f). The probable source of water was from site infrastructure, such as pipe chases or leaking water lines. The leaking water lines were removed, and some pipe chases may still exist depending on depth. Several seeps still remain active. LM will monitor these as prescribed by the groundwater monitoring plans detailed in the O&M Plan. When contaminant levels are below regulatory concern, DOE will stop monitoring these seeps, and the seeps will come under the control of the property owner. If the seeps dry up, then they may revert to upland and may no longer be regulated waters (DOE 1999f). The property owner would have to request removal from USACE (see Section 5.1.2).
- The DOE sedimentation basins were eliminated as regulated waters during the wetland delineation process (DOE 1999f), even though those areas support wetland vegetation; however, if the use of these sedimentation basins changes, then those areas may become subject to regulation. As part of the CERCLA cleanup, the sedimentation basins were removed along with any contaminated soil. After the removal process was verified as meeting the industrial reuse guidelines, the area was backfilled with clean soil and planted with grass. Since the basins are gone, there will be no issues with future property owners after DOE transfers the Mound site to new, private ownership.
- Several streams on the Mound site were identified by USACE as regulated waters (DOE 1999f). The main ditch running through the Mound site valley is the largest of the regulated streams (Figure 4). Most of the northern portion of the main ditch was converted to underground storm water closed-concrete pipe. A small portion of the original drainage ditch remains open and conveys storm water into a 96-inch elliptical pipe extending offsite.
- There are no cultural resources at the Mound site, as confirmed by the Ohio Historic Preservation Office (OHPO) and other subject matter experts (WSU 1987, ASC 1991).

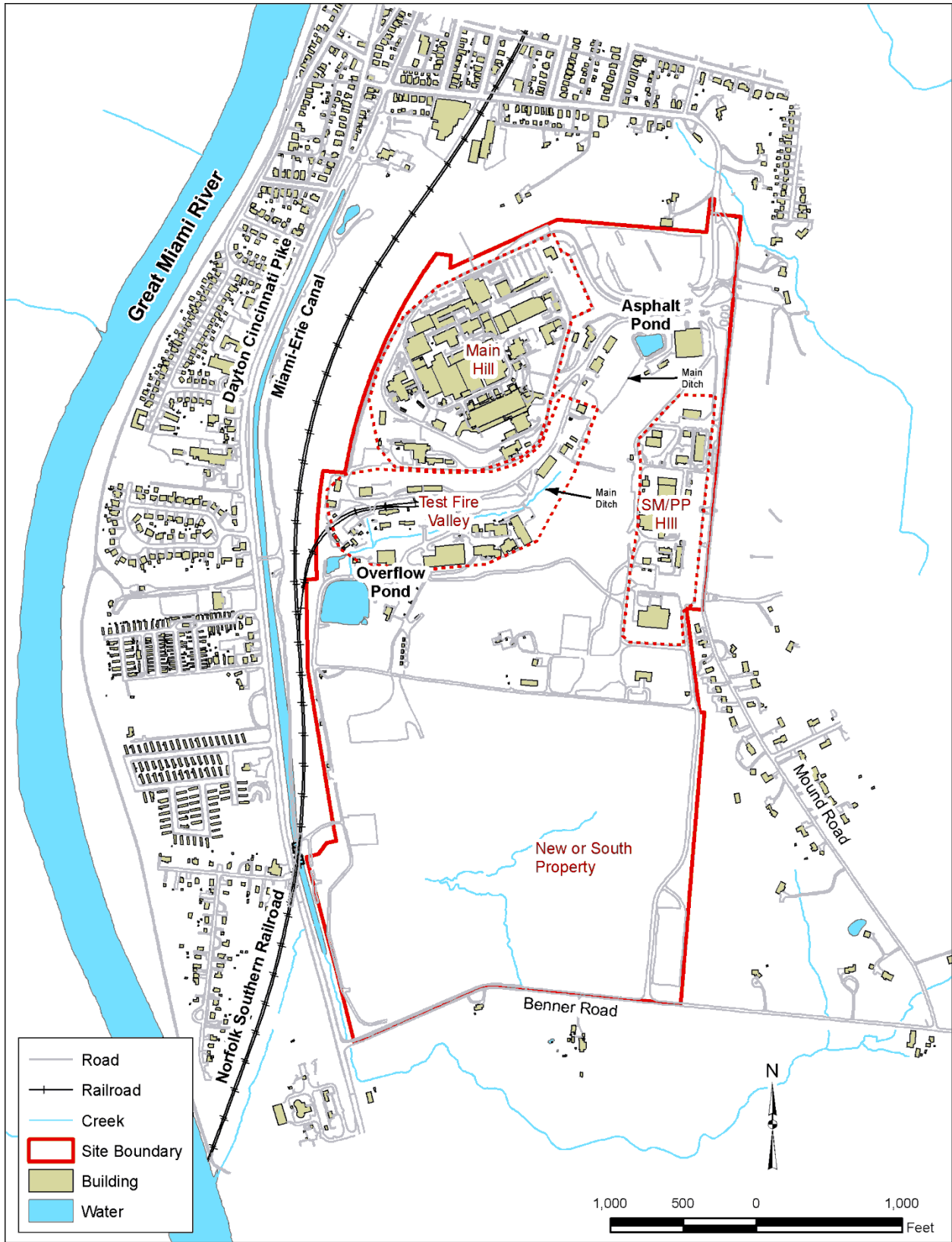


Figure 4. Layout of the Mound Site During Operational Period

- In mid-1998, OHPO, under authorization of the National Historic Preservation Act, declared the original 17 buildings constructed in 1948 to be historic buildings and eligible for placement on the National Register of Historic Places (NRHP). These 17 buildings were demolished or transferred to the Mound Development Corporation (MDC). In October 2000, DOE and the Advisory Council on Historic Preservation signed a Memorandum of Agreement (DOE 2000a) that outlined mitigative measures for the 17 buildings. As mitigation for demolition of buildings that are eligible for inclusion of the NRHP, DOE prepared documentation packages for submission to the U.S. National Park Service for incorporation into the National Archive and to OHPO for incorporation into the OHPO's archive. The type of documentation package prepared for the historic buildings was determined by the function of the building (i.e., operational or administrative). The documentation packages fulfilled the requirements of Section 106 of the National Historic Preservation Act for all 17 buildings eligible for the NRHP at the Mound site.

2.2 Site History

This section summarizes the pertinent information regarding the operation, remediation, and transfer of the Mound site.

2.2.1 Operational History

The U.S. Atomic Energy Commission (AEC) began operations at the Mound site in 1948 as an integrated research, development, and production facility that supported the nation's weapons and energy programs, with emphasis on explosives and nuclear technology. The site, which was in operation from 1948 to 2003, was situated on 182 acres. In 1981, DOE purchased an additional 124 acres of land south of the original property, called the "New" or "South" property, which remained undeveloped.

At one time, the Mound site contained approximately 116 buildings and structures. The *Operable Unit 9, Site Scoping Report: Volume 7—Waste Management* (DOE 1993a) provides detailed information regarding each building, production process, and waste stream.

During operations, the Mound site worked with various AEC and DOE organizations, including Office of Military Applications (OMA), Defense Programs (DP), Advanced Nuclear Systems and Projects Division (ANSPD), Nuclear Energy (NE), and others. Section 2.3.2 of the O&M Plan presents a chronology of significant site events.

2.2.2 DOE and Contractors

During the period of 1948 to 2014, the Mound site was managed by prime site contractors and an OU-1 removal contractor:

- 1948–1988: Monsanto Research Corporation
- 1988–1997: EG&G Mound Applied Technologies Inc.
- 1997–2002: BWXTO Inc.
- 2003–2006: CH2M HILL Mound Inc.

- 2006–2010: Accelerated Remediation Company (aRc)—non-CERCLA OU-1 excavation and two CERCLA potential release site (PRS) removals
- 2005–2015: Stoller Newport News Nuclear, Inc., a wholly owned subsidiary of Huntington Ingalls Industries, Inc.

Each new prime contractor was given the opportunity to reorganize the work scope using different terminology and area designations. Before CERCLA, contractors conducted work using the decontamination and decommissioning (D&D) requirements. Early environmental surveys and planning were organized by areas, operable units, Main Hill, Test Fire Valley, SM/PP Hill, release blocks, and other categories; and the initial reports contained these identifiers. PRSs were identified based on knowledge of historical land use or an actual sampling result that showed elevated concentrations of contaminants. Other defined remediations were organized by features, such as buildings, slabs, underground lines, overhead lines, stacks, and so on. The site was finally organized into parcels shown in Figure 7.

EM also reorganized its oversight during that time, changing from the Albuquerque Operations Office to the Miamisburg Environmental Management Project (MEMP) under the Ohio Field Office to the Miamisburg Closure Project (MCP) under the EM Consolidated Business Center.

In 2005, LM began to work with EM MCP to transition the site from remediation status to post-closure surveillance and maintenance. The LM Mound site manager and the prime contractor occupied a site office from 2005 until 2011, when they consolidated offices with the Fernald Preserve office at Harrison, Ohio. The EM MCP project manager also worked on the Mound site until September 2011.

2.3 Nature and Extent of Contamination Before Remediation

From the beginning of site operations, AEC collected and assessed environmental data onsite and offsite. From 1970 to 2002, the site published annual environmental monitoring reports. These reports, called Environmental Monitoring Reports or Site Environmental Reports, are available on the LM public website.

DOE conducted comprehensive chemical and radionuclide characterizations before and during the cleanup to evaluate both the nature and extent of contamination and to identify potential exposure pathways and potential human and environmental receptors (i.e., develop a site conceptual model). These characterizations identified contamination in four media (soil, groundwater, surface water, and buildings/structures), with the majority of contamination present as low-level radioactivity or chemical contamination in the soil.

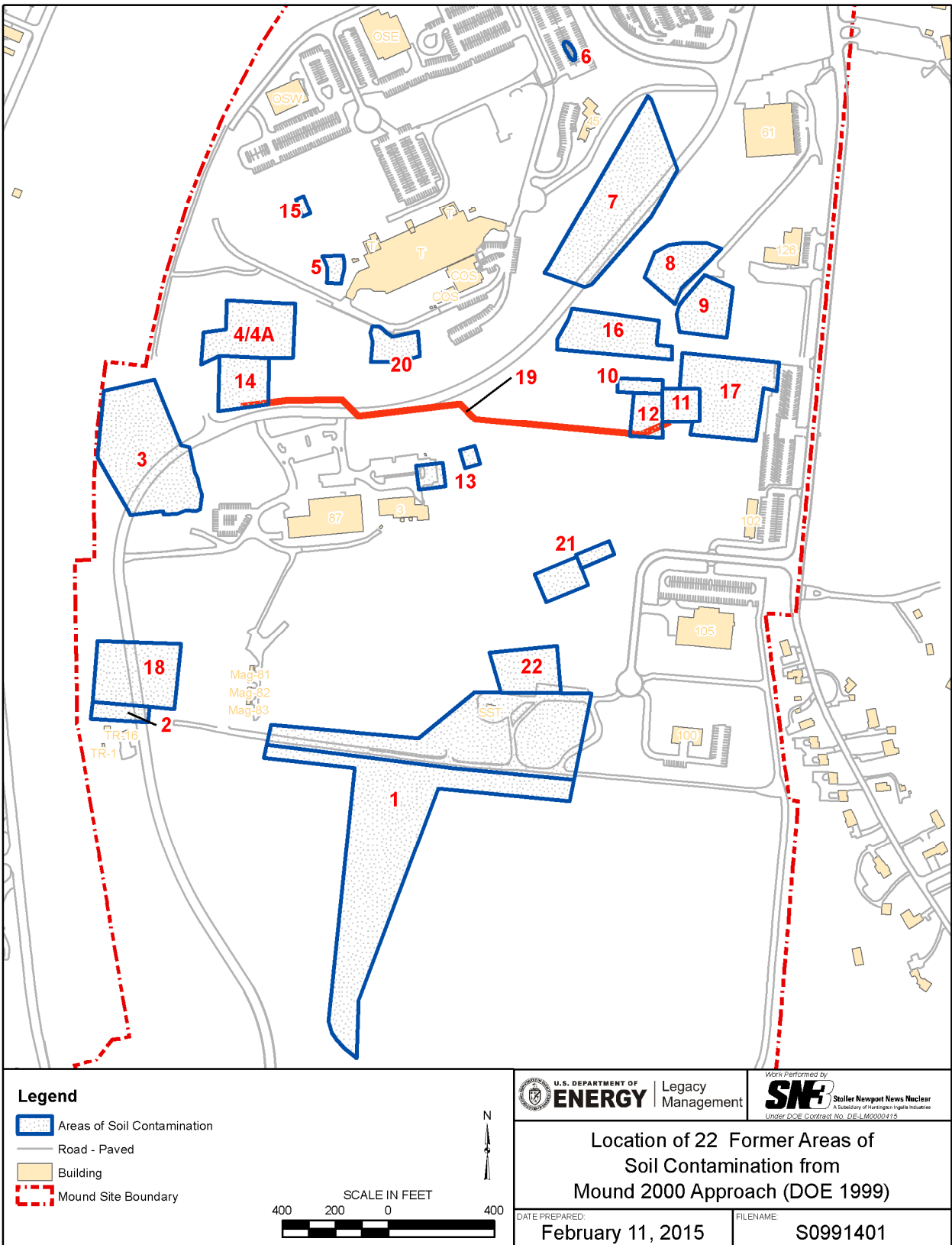
The following two sections summarize Section 3.3 of the *Work Plan for Environmental Restoration at the Mound Plant, The Mound 2000 Approach* (DOE 1999a), which contains more detail about contaminants and extensive sampling events conducted. Specific detailed information about contamination for each PRS, building, and parcel is located in the documents for those items.

2.3.1 Soil

The organic chemicals detected in site soils included petroleum hydrocarbons, polynuclear aromatic hydrocarbons, and chlorinated solvents, such as trichloroethene.

Radionuclides present at levels above background included plutonium-238, thorium (total and the isotope thorium-230), cobalt-60, cesium-137, tritium, actinium-227, americium-241, bismuth-207, and bismuth-210m. Depleted uranium (uranium-238) was suspected to be present in the metallic form in some areas. Overall, 22 areas of potential radiological contamination, shown in Figure 5, were identified during initial characterizations. All of these areas were evaluated and remediated if necessary during the CERCLA cleanup. The areas are the following:

- Area 1, a historical thorium storage and re-drumming area.
- Area 2, a historical disposal trench for empty thorium drums and for polonium-210–contaminated sand.
- Area 3, a historical thorium storage and re-drumming area.
- Area 4, an area surrounding the Waste Disposal (WD) Building where influent tanks containing polonium-210, cobalt-60, and plutonium-238 overflowed.
- Area 4a, the old sewage disposal plant area contaminated by polonium-210, cobalt-60, and plutonium-238.
- Area 5, the location of a waste-line break containing polonium-210 and cobalt-60.
- Area 6, a historical disposal trench for polonium-210–contaminated sand.
- Area 7, a historical disposal area used for the disposal of empty thorium drums, a thorium-contaminated dump truck, and a polonium-210–contaminated washing machine, and including an area containing a historical septic tank contaminated with actinium-227 from the old Semi Works (SW) Building.
- Area 8, thorium-contaminated soils moved from Areas 1 and 9.
- Area 9, a historical thorium storage and re-drumming area.
- Area 10, a historical disposal area containing concrete contaminated with polonium-210.
- Area 11, a historical storage area for plutonium-238–contaminated wastes from the Special Metallurgical (SM) Building.
- Area 12, thorium-contaminated soils moved from Area 1.
- Area 13, a historical treatment area where debris contaminated with polonium-210 was burned.
- Area 14, the location of the 1969 waste transfer line (plutonium-238) break.
- Area 15, a historical radium-226/actinium-227 processing area entombed in concrete inside the SW Building.
- Area 16, a historical sanitary leach field for the SM Building (plutonium-238).
- Area 17, the area under and surrounding the SM Building contaminated with plutonium-238 from spills of plutonium wastes.



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Figure 5. Location of 22 Former Areas of Soil Contamination identified in Mound 2000 Approach (DOE 1999)

- Area 18, site sanitary landfill that may have received sediments from the ditch contaminated with plutonium-238.
- Area 19, the historical underground waste transfer lines for plutonium-238 liquid wastes.
- Area 20, the location of a waste-line break between the WD Building and the Hydrolysis House (HH) Building (cobalt-60, cesium-137, bismuth-210m, and bismuth-207).
- Area 21, a historical storage area used for storage of high-risk wastes from the SW Building (cesium-137 and radium-226).
- Area 22, a soil storage area containing soil with cobalt-60, cesium-137, and plutonium-238 contamination moved from Area 20 and other areas of the site.

2.3.2 Groundwater and Surface Water

Chemical contamination in groundwater consisted primarily of three chlorinated solvents with some associated breakdown products, such as vinyl chloride. In addition to chlorinated solvents, metals (e.g., chromium, nickel, and cadmium) were detected in groundwater at elevated levels (i.e., levels that exceeded drinking water standards) (DOE 1999f).

Tritium contamination in groundwater of the BVA was present at levels slightly above background, but well below the drinking water standard. Tritium concentration in the Main Hill bedrock area was above drinking water standards. Surface water with tritium contamination was detected in seeps located around the Main Hill. A comprehensive sampling of sediments indicated that plutonium-238 was a common contaminant in the site drainage ditch, asphalt-lined pond, Miami-Erie Canal, overflow creek, and National Pollutant Discharge Elimination System outfall 002 sampling locations. With the exception of the two sampling locations in the Miami-Erie Canal, which indicated the highest levels of plutonium-238 in both sediment and subsurface soils, there was no distinguishable pattern of downstream trends indicating migration of plutonium-238. In addition, no other offsite locations had sample results for plutonium-238 greater than the established guideline values.

2.3.3 Buildings/Structures

In January 1998, there were 116 buildings onsite. Chemicals such as polychlorinated biphenyls, and some laboratory solvents such as 2-butanone and toluene, were detected infrequently throughout various facilities. Other nonradiological environmental concerns pertaining to buildings and structures included lead, lead paint, and asbestos.

2.4 Organization of Site Remediation

2.4.1 Environmental Restoration (ER) Program

DOE Albuquerque Operations Office initiated the Mound site ER Program, formerly known as the Comprehensive Environmental Assessment and Response Program, in 1984 to fulfill its obligations under the following environmental laws:

- CERCLA, as amended by SARA (Title 40 *Code of Federal Regulations* Part 300 [40 CFR 300], “National Oil and Hazardous Substances Pollution Contingency Plan”).
- The Resource Conservation and Recovery Act (RCRA) (40 CFR 260–270).

- The National Environmental Policy Act of 1969 (Volume 83, page 852, *U.S. Statutes* and Title 42 *United States Code* Section 4321 [42 USC 4321]).
- The Atomic Energy Act of 1954 (Volume 68, *U.S. Statutes* and 42 USC 2011).

The ER Program planned for three phases patterned after the CERCLA program:

- Phase I, Preliminary Assessment/Site Inspection, was completed in 1986 and was reported in *Phase I: Installation Assessment, Mound* (DOE 1986b).
- Phase II, Remedial Investigation/Feasibility Study (RI/FS), was described in the *Remedial Investigation/Feasibility Study Operable Unit 9, Site-Wide Work Plan* (DOE 1992i) and reported in feasibility studies.
- Phase III, Remedial Design/Remedial Action, would implement the remedial alternative chosen in the feasibility study of Phase II.

2.4.2 Operable Units (OUs)

Because of the size and complexity of the Mound Plant, the site was initially divided into OUs to manage the RI/FS investigations. The nine OUs shown in Figure 6 were originally defined as follows:

- Area B (OU-1) included a historical waste disposal area (landfill).
- Main Hill Seeps (OU-2) included PRSs on the Main Hill, including some peripheral groundwater seeps. Its scope included characterization of the bedrock, unconsolidated overburden, associated soils, and groundwater.
- Miscellaneous Sites (OU-3) included PRSs for which little or no data concerning site contamination or releases were available.
- Miami-Erie Canal (OU-4) addressed an abandoned segment of the Miami-Erie Canal west of Mound Plant, which contained plutonium-contaminated sediments from a 1969 waste-line break and tritium-contaminated soils.
- Radioactively Contaminated Soils (OU-5) included site soils with known or suspected radioactive contamination, and it included geographic responsibility for the Special Metallurgical/Plutonium Processing Hill.
- D&D Program Sites (OU-6) included PRSs with radioactively contaminated soils that were undergoing cleanup or were already scheduled for Atomic Energy Act D&D Program cleanup.
- Limited Action Sites (OU-7) included PRSs that were believed to have no contamination based on a review of site histories and an August 1990 joint visual site inspection by DOE, EPA, and Ohio EPA.
- Inactive Underground Storage Tanks (OU-8) included a review to determine the regulatory status of all underground tanks at Mound Plant, resulting in a distribution of responsibility for the tanks between the ER Program and a Mound Plant underground tank compliance program under RCRA Subtitle I, to be administered by the State of Ohio. Those tanks remaining in the ER Program were assigned to other OUs.
- Sitewide RI/FS (OU-9) included offsite migration of contaminants in groundwater, soils, surface water, and sediments; airborne contamination; and ecology.

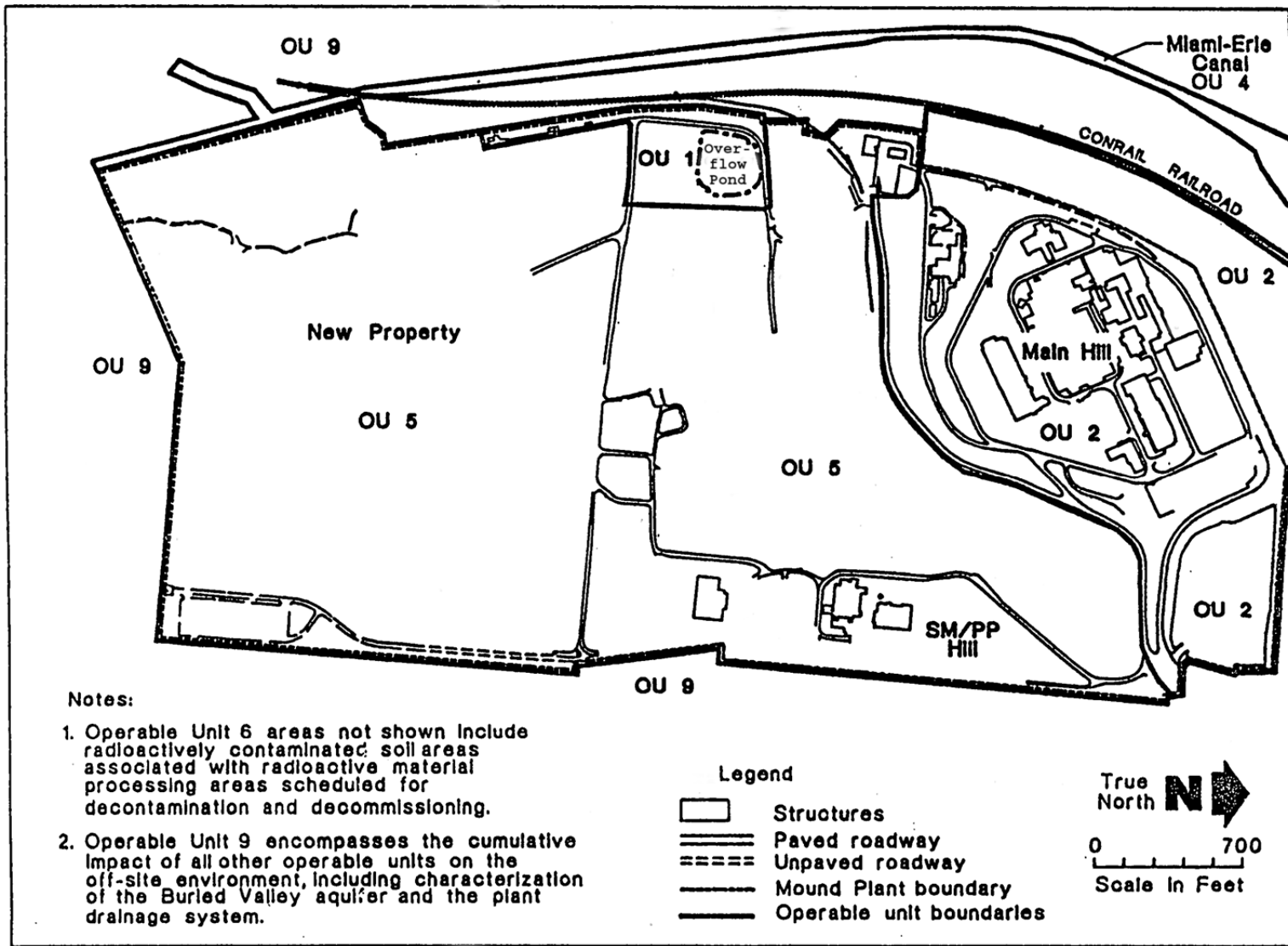


Figure 6. Drawing of Operable Units from RI/FS Operable Unit 2, Main Hill Work Plan (DOE 1994c)

2.4.3 Early D&D Activities

Early cleanup activities were conducted by various government entities throughout the Mound site's operations period. Responsibility for D&D cleanups was shared according to agreements negotiated by DOE, such as those described in the *Coordinated ANSPD (NE) and OMA Decontamination and Decommissioning (D&D) Program Plan* (DOE 1986a).

Some of the early site remediations conducted before the Mound 2000 Process (DOE 1999a) included:

- **Technical (T) Building Polonium-210 Areas:** In 1974, polonium-210 operations and service floors (50 percent of building) of T Building were decontaminated.
- **Soil Removal near Building 34:** In 1989, soil contaminated with uranium near Building 34 was removed.
- **Research (R) Building Decontamination:** In 1990, decontamination of inactive laboratories in R Building (10 percent of building) was completed. The contaminant of concern was plutonium-238.
- **Underground Lines Project (Area 14/19):** In 1991, approximately 600 linear feet of contaminated pipe was unearthed and shipped offsite for burial. The pipe was part of the waste line that connected with the WD facility. The contaminant of concern was plutonium-238.
- **Plutonium Processing (PP) Building (Also Known as Building 38) Decontamination:** In 1993, the decontamination of 90 percent of PP Building and the Acid Leach Field (Area D) was completed. The contaminant of concern was plutonium-238.
- **Special Metallurgical (SM) Building Demolition:** The SM Building demolition was completed in the latter part of 1994. The building was a 20,000-square-foot facility used for plutonium-238 research. Most of the structural steel was transported to the SEG Company located in Oak Ridge, Tennessee, where the metal was recycled for other DOE projects.
- **OU-1 ROD:** In June 1995, a ROD for the removal of volatile organic compounds in groundwater was approved. The remedial action (air stripping) officially began in February 1997. An air sparging/soil-vapor extraction system was added in December 1997 to augment the air stripper and accelerate the remediation.
- **OU-5 Removal Action:** In February 1996, removal and bioremediation of oil-contaminated soil at the Fire Fighting Training Area was completed.
- **Interim Response Action:** In October 1995, the Drainage Control Interim Response Action was completed. This involved Area 1, Area 3, Area 22, and Building 19.
- **Removal Action:** In February 1996, the B-Building Solvent Storage Shed Removal Action for PRS 129/130 was completed.
- **Sewage Disposal (SD) Building Demolition:** The SD Building was demolished in June 1996. After demolition, contaminated soils were excavated.
- **Building 21 Demolition:** In the fall of 1996, Building 21 was demolished, and contaminated soils surrounding the building were excavated. The facility had been used to store bulk quantities of thorium ore and thorium sludges.

- **Removal Action:** In June 1997, removal of soil contaminated with actinium-227 at PRS 86 (Area 7) was completed.
- **Burn Area RCRA Closure:** In January 1998, DOE issued the *Burn Area Certification of the RCRA Closure and Final Amended Burn Area Closure Plan* (DOE 1998a) that documented the remediation of six RCRA-regulated units (two storage and four treatment) within the Burn Area that were used to manage and dispose of, through treatment, energetic materials including weapons components and powders. These units included Magazine 53, Pyroshed, Open burn unit, Retort unit, Energetic materials pretreatment unit, and Thermal treatment unit.
- **OU-4 Removal Action:** In May 1998, fieldwork for the Miami-Erie Canal removal action was completed.

2.4.4 CERCLA, NPL, and Federal Facility Agreement (FFA)

2.4.4.1 CERCLA and NPL

CERCLA enabled the revision of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300). The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the NPL. The NPL serves primarily informational purposes, such as notifying the government and the public of those sites or releases that appear to warrant remedial actions and helping EPA prioritize sites for cleanup.

The DOE Mound Plant, Miamisburg, Ohio, was placed on the CERCLA NPL on November 21, 1989 (Volume 54, *Federal Register*, page 48184), as a consequence of historical disposal practices and releases of contaminants to the environment. The Mound Plant received an overall Hazard Ranking System score of 34.61, which exceeded the threshold (28.51) for NPL listing.

2.4.4.2 FFA

Pursuant to its NPL status, DOE signed a CERCLA Section 120 FFA with EPA that became effective October 1, 1990 (40 CFR 300). The Ohio EPA became a signatory to the agreement in July 1993, making it a tripartite agreement (EPA 1993).

The terms of the FFA required that DOE develop and implement remedial investigations (RIs) and feasibility studies (FSs) and conduct interim remedial actions to ensure that environmental impacts associated with past and present activities at the site were thoroughly investigated and appropriate action was taken to protect the public health, welfare, and the environment. As part of the early RI/FS scoping process, DOE conducted limited field investigations to identify the presence and type of contaminants and to provide adequate data to plan the RI/FS and write an RI/FS work plan. Results of the investigations were used to support a recommendation for no further action, remedial response (including removal action), or further site characterization.

2.4.4.3 *Site Scoping Report*

The FFA Statement of Work also provided guidance to develop a comprehensive site scoping report to assess contamination at locations of actual or suspected releases. The resulting *Operable Unit 9 Site Scoping Report* was published as a series of 12 volumes that are available on the LM CERCLA website. The published volumes are:

- Volume 1 - Groundwater Data: February 1987–July 1990 and Addendum (DOE 1992a).
- Volume 2 - Geologic Log and Well Information Report (DOE 1992h).
- Volume 2 - Addendum—Stratigraphic and Lithologic Logs (DOE 1993b).
- Volume 3 - Radiological Site Survey (DOE 1993d).
- Volume 4 - Engineering Map Series (DOE 1992b).
- Volume 5 - Topographic Map Series (DOE 1992c).
- Volume 6 - Photo History Report (DOE 1992d).
- Volume 7 - Waste Management (DOE 1993a).
- Volume 8 - Environmental Monitoring Data: 1976–1989 (DOE 1992e).
- Volume 8 - Addendum—Vegetation and Foodstuff (DOE 1994a).
- Volume 9 - Annotated Bibliography (DOE 1993c).
- Volume 10 - Permits and Enforcement Actions (DOE 1992g).
- Volume 11 - Spills and Response Actions (DOE 1992f).
- Volume 12 - Site Summary Report (DOE 1994b).

2.4.5 **Mound 2000 Approach**

In 1995, DOE and its regulators developed an approach to making decisions about the environmental restoration of the Mound site and its facilities that satisfied the intent of CERCLA. This approach is known as the Mound 2000 Process (DOE 1999a). This process evaluated each PRS or building separately, used removal action authority to remediate the PRSs, and established a goal for no additional remediation other than ICs for the final remedy. EPA and Ohio EPA reserved all rights to enforce all provisions of the FFA, and participation in the Mound 2000 Process did not constitute a waiver of EPA's and Ohio EPA's rights to enforce the FFA.

The Mound 2000 Process established a Core Team of representatives from EM (the Miamisburg Closure Project), EPA, and Ohio EPA. The Core Team evaluated each PRS and recommended the appropriate response based on process knowledge, site visits, and existing data. If a decision could not be made, the Core Team identified specific additional information needed (e.g., data collection, investigations). The Core Team also received input from technical experts, the general public, and public interest groups.

The Mound 2000 Approach enabled the exit plan goal of transferring property to MDC for economic redevelopment and ultimately delisting the site from the NPL.

2.5 Risk Evaluation Process

The Core Team agreed on using the *Mound 2000 Residual Risk Evaluation Methodology* (DOE 1997a) to calculate the total, background, and incremental risks for exposure scenarios for a construction worker and site worker onsite. These risks were compared to the NCP (40 CFR 300) acceptable risk range of 1×10^{-6} to 1×10^{-4} for carcinogenic risk (corresponding to an increased cancer risk of 1 in 1 million to 1 in 10,000) as well as Ohio EPA's target risk goal of 1×10^{-5} (Ohio EPA 2009). DOE also compared noncarcinogenic hazards to the EPA and Ohio EPA target hazard index goal of 1.0 (40 CFR 300; Ohio EPA 2009). Total risk for both the construction worker and site worker scenarios slightly exceeds the Ohio EPA target risk goal, supporting the use and enforcement of ICs as part of the final remedy.

2.5.1 Risk-Based Guideline Values

Risk-based guideline values were developed specifically for the DOE Mound Plant in Miamisburg, Ohio. These guideline values were developed by using *Risk Assessment Guidance for Superfund: Volume 1—Human Health Evaluation Manual, Part B—Development of Risk-based Preliminary Remediation Goals* (EPA 1991). The guideline values are risk-based media-specific contaminant concentrations derived for specific carcinogenic risk levels (e.g., 10^{-4} , 10^{-5} , 10^{-6}) and noncarcinogenic chronic and sub-chronic effect levels (hazard index = 1) that are applicable to land use/exposure scenarios likely to occur at the Mound Plant.

The original document developed to establish guideline values was *Risk-Based Guideline Values, Mound Plant, Miamisburg, Ohio*, Final (DOE 1997b). Appendix A of that document contains the equations and exposure variables used to calculate the values. All input parameters are listed with references to document their applicability to the Mound Plant. Values were updated as necessary during the cleanup. The final version was *Risk-Based Guideline Value Document, Revision 9*, dated June 8, 2006 (DOE 2006a). Both documents are available in the CERCLA Administrative Record (AR) on the LM public website.

2.5.2 Cleanup Objectives

DOE established cleanup objectives for radioisotopes and chemicals based on the risk-based guideline values referenced in Section 2.5.1. Contractors sampled the soil in a grid pattern and removed the "hot spots" that tested above cleanup objectives for industrial use. DOE took more than 200,000 samples (soil, water, and air) during the cleanup, which led to the identification, excavation, and offsite disposal of 6,000 railcars of contaminated soil. All radiological contaminated soils above the cleanup objectives were excavated and shipped offsite.

3.0 Final Physical Site Conditions

3.1 End State of Industrial Land Use Only

As described in Section 2.4, DOE, EPA, Ohio EPA, the Ohio Department of Health (ODH), and stakeholders agreed to an industrial land-use-only standard for the site, which was consistent with the exposure assumptions provided in the *Mound 2000 Residual Risk Evaluation Methodology* (DOE 1997a).

The industrial land-use-only end state ensures that workers can work safely at the site without being exposed to hazardous substances above the risk-based guideline values. The cleanup objectives were verified by the parcel verification sampling events, the completion of the Residual Risk Evaluations (RREs), and the independent verification surveys conducted by the Ohio EPA and the Oak Ridge Institute for Science and Education (ORISE). There is a very low probability that an isolated hot spot could remain, and an even lower probability that a worker could be exposed to harmful levels of radiological or chemical contamination from that spot.

DOE remediated the soil under the footprint of demolished buildings as necessary, performed verification sampling, and prepared the land surface. DOE remediated the T Building to industrial use standards with additional ICs as described in Section 3.6.

There are no known remaining sources within the soils onsite. Any residual contamination in the soils is below cleanup objectives acceptable for an industrial use standard. DOE imposed an IC in the form of a deed restriction/environmental covenant that prohibits removal of soil from the site without prior approval by EPA, Ohio EPA, and ODH.

The industrial land-use-only end state requires land use restrictions for onsite parcels, which run with the land in the form of (1) restrictions and covenants in quitclaim deeds or (2) activity and use limitations in the lease agreement and the environmental covenant in the *Parcel 9 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances*, Final (DOE 2011c). All onsite parcel RODs include institutional controls, as described in Section 3.6, as part of the remedy.

3.2 Verification Sampling and Reporting

EM conducted final characterizations after remediation of PRSs and buildings. The data were presented in the closeout reports and on-scene coordinator reports and were evaluated in the RREs for each parcel, which are available in the CERCLA AR available on the LM public website.

EM was responsible for oversight of the remedial action and final status survey activities at MCP. DOE performed independent (third-party) verification of final status survey activities. These independent verifications confirmed that remedial actions met established and site-specific guidelines and the documentation accurately and adequately described the radiological conditions at the site. DOE designated ORISE as the independent verification contractor to verify the final radiological status of the cleanup activities associated with the Buildings 45, 61, OSE, OSW, and T Building, as well as Parcels 6, 7, and 8. The results are detailed in the *Independent Verification Survey Report for the Miamisburg Closure Project, Miamisburg, Ohio, Final, February 2007* (ORISE 2007).

ORISE also conducted an independent verification of the non-CERCLA OU-1 excavation, included as Appendix D of the *Operable Unit 1 Landfill Area Closeout Report, Final* (aRc 2010).

3.3 Residual Risk Evaluations

After remediation and final verification sampling, DOE conducted an RRE for each parcel using the exposure assumptions provided in the *Mound 2000 Residual Risk Evaluation Methodology*

(DOE 1997a), which quantified potential carcinogenic and non-cancer health effects associated with any residual contaminants remaining in the area. DOE evaluated the cumulative impact of chronic low-level exposure to those contaminants within each land parcel to ensure that the parcel, as a whole, did not pose an unacceptable risk to human health and the environment under an industrial use standard. The RREs for all parcels are located in the AR.

3.4 RODs and Environmental Summaries (ESs)

After completing remediation in a specific release block, phase, or parcel, DOE completed a ROD and an Environmental Summary (ES) (also known as the CERCLA 120[h] Summary Notice of Hazardous Substances) for that parcel. Each ROD summarized the problems within that parcel, evaluated the alternative approaches against the nine NPL criteria, and provided the technical aspects of the selected remedy. Each ROD also specified the monitoring requirements, ICs, and the requirements for CERCLA Five-Year Reviews. Each ES described the final environmental, building, and land conditions. Table 2 lists the parcels and CERCLA documents, and Figure 7 shows the parcel locations.

Table 2. Mound Site ROD and ES Information

ROD Parcel ID	Document	Approval Date
D	<i>Record of Decision for Release Block D, , Mound Plant, Miamisburg, Ohio, Final (DOE 1999c)</i>	February 1999
	<i>CERCLA 120(h) Summary Notice of Hazardous Substances, Release Block D, Mound Plant, Miamisburg, Ohio, Final (DOE 1999b)</i>	
H	<i>Record of Decision for Release Block H, Mound Plant, Miamisburg, Ohio, Final (DOE 1999d)</i>	June 1999
	<i>CERCLA 120(h) Summary Notice of Hazardous Substances, Release Block H, Mound Plant, Miamisburg, Ohio, Final (DOE 1999e)</i>	July 1999
3	<i>Parcel 3 Record of Decision, Mound Plant, Miamisburg, Ohio, Final (DOE 2001d)</i>	September 2001
	<i>Parcel 3 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances, Mound Plant, Miamisburg Ohio, Final (DOE 2001a)</i>	
4	<i>Parcel 4 Record of Decision, Mound Plant, Miamisburg, Ohio, Final (DOE 2001b)</i>	February 2001
	<i>Parcel 4 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances, Mound Plant, Miamisburg, Ohio, Final (DOE 2001c)</i>	March 2001
6, 7, 8 (included former Parcel 6A)	<i>Parcels 6, 7, and 8 Record of Decision, Miamisburg Closure Project, Miamisburg, Ohio, Final (DOE 2009)</i>	August 2009
	<i>Parcels 6, 7, and 8 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances, Final (DOE 2010)</i>	August 2010
9 (OU-1 and expanded area)	<i>Operable Unit 1 Record of Decision, Final, (DOE 1995)</i>	June 1995
	<i>Parcel 9 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances, Final (DOE 2011c)</i>	August 2011
	<i>Amendment of the Operable Unit 1 Record of Decision, U.S. Department of Energy, Mound Closure Project, Final (DOE 2011a)</i>	August 2011
Phase I (A, B, C)	<i>Phase I Record of Decision, Miamisburg Closure Project, Final (DOE 2003b)</i>	July 2003
	<i>Phase I Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances, Miamisburg Closure Project, Final (DOE 2003a)</i>	December 2003
OU-4	<i>Miami-Erie Canal Record of Decision, Miamisburg Closure Project, Final, Revision 0 (DOE 2004)</i>	September 2004
	OU-4 was on City of Miamisburg property, so no ES was required or issued. No further action or institutional controls apply to this property.	

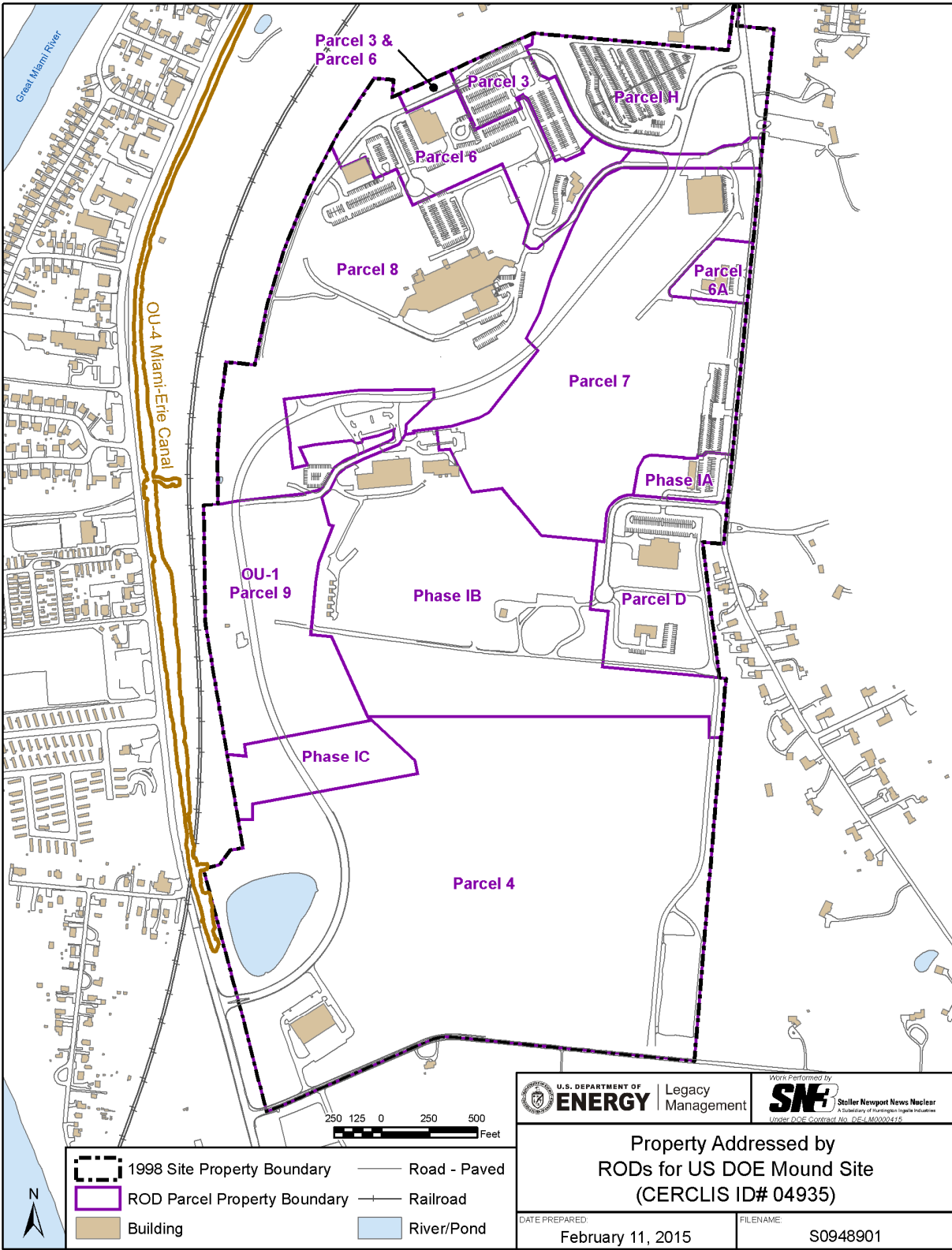


Figure 7. Property and Parcels Addressed by RODs at the Mound Site

3.5 CERCLA Remedies

3.5.1 Selected Remedies in RODs

- **OU-1 (and OU-1 ROD Amendment - Parcel 9):** Collection, treatment, and disposal of groundwater with the common elements of surface water controls; ICs in the form of deed restrictions on future land and groundwater use; and long-term groundwater monitoring. Note that the 1995 ROD also limited site access to the actual OU-1 landfill area, but the 2011 ROD Amendment removed this restriction and added the general site ICs.

An enhanced attenuation field demonstration was started in 2014 (DOE 2014b) to evaluate the use of edible oils to enhance natural attenuation processes to address chlorinated volatile organic compounds in groundwater. As part of the field demonstration, extraction and treatment of groundwater was temporarily stopped and the pump-and-treatment (P&T) system was placed in standby condition with the approval of the regulators.

- **OU-4:** No remedy required.
- **Parcels 3, 4, D, H:** ICs in the form of deed restrictions on future land and groundwater use.
- **Parcel Phase I:** ICs in the form of deed restrictions on future land and groundwater use and monitored natural attenuation.
- **Parcels 6, 7, and 8:** ICs in the form of deed restrictions on future land and groundwater and monitored natural attenuation.

Table 3. Summary of RODs, Remedies, ICs, and Legal Enforcement Instruments

ROD Parcel ID	Former Names	ROD Date	Acreage in ROD	Remedy	Owner	Legal Enforcement Instrument	Objectives of ICs
OU-1	Area B, landfill area	1995	See Parcel 9	See Parcel 9	See Parcel 9	See Parcel 9	Restrict land use to industrial only.
D	Portion of Release Block D 5.519 acres	1999		ICs	Dyrdek Group	Deed restrictions in Limited Warranty Deed dated December 23, 2014 (File # 2014-00069587)	Prohibit the removal of soil.
D	Release Block D	1999	12.43	ICs	MDC and City of Miamisburg	Deed restrictions in quitclaim deed dated February 11, 2009 and quitclaim deed November 13, 2013 (File # 2013-00079430)	Prohibit the use of groundwater.
H	Release Block H	1999	14.29	ICs			
3	None	2001	5.581	ICs			
4	New or South property ^a	2001	94.838	ICs			
Phase I	A	2003	2.542	Monitored natural attenuation			Prohibit the removal of concrete floor material in specified rooms of T Building.
	B		42.882				
	C		6.568	ICs			
6	6, 6A 7, and 8	2009	13.636	Monitored natural attenuation	DOE leased to MDC	Appendix #1 to General Purpose Lease Agreement (December 2013)	Prohibit the penetration of concrete floor material in specified rooms of T Building.
7			42.307				
8			45.247				
			2.352 or 3.320				
	Tract 1 Tract 2 (part of 6A and 7)		5.350	ICs	BOI Solutions	Deed restrictions in MDC limited warranty deed dated December 14, 2012 (File # 2012-00084260)	Provide site access for federal and state agencies for taking response actions, including sampling and monitoring.
			0.271				
9 (OU-1)	Includes OU-1, PRS 441, former rail spur and spoils areas	OU-1 ROD 1995 and OU-1 ROD amendment 2011	23.148	Hydraulic containment Surface water controls Long-term groundwater monitoring ICs	DOE	Environmental Covenant approved December 22, 2011 (Recorded for entire site as a Special Instrument Deed 2012-00004722 on January 24, 2012)	
OU-4	Miami-Erie Canal	2004	On City property	No action	City of Miamisburg	None required	No ICs required

^a Portions of the New or South Property are included in Phase I and Parcel 9 areas.

3.5.2 OU-1 Remedy—Pump-and-Treatment System

This section summarizes the purpose and operation of the P&T system, which is part of the remedy for the OU-1 area within Parcel 9, and is consistent with the requirements of the OU-1 ROD (DOE 1995).

As stated in Section 3.5.1, the P&T system ceased operation during the enhanced attenuation field demonstration in 2014 (DOE 2014b) and was placed in standby mode. The following subsections in Section 3.5.2 are not applicable during the shutdown, but they are being retained here in case the system is restarted.

If it is determined that monitored natural attenuation (MNA) is a viable remedy for OU-1 groundwater and the P&T system remains off, then DOE will request to transition from P&T to MNA, likely through an amendment to the ROD.

Groundwater monitoring during the enhanced attenuation field demonstration will follow the *OU-1 Enhanced Attenuation Field Demonstration Sampling and Analysis Plan* (DOE 2014c).

3.5.2.1 Purpose of System

The main purpose of the P&T system is to prevent further migration of affected groundwater and to treat extracted water to acceptable levels for disposal. A groundwater contaminant plume emanates southward from the former OU-1 landfill and travels south and southwest of the former OU-1 landfill. The primary contaminants of concern are *cis*-1,2-dichloroethene; *trans*-1,2-dichloroethene; tetrachloroethene; tetrachloromethane; 1,1,1-trichloroethane; trichloroethene (TCE); trichlorofluoromethane; chloroform; and vinyl chloride.

3.5.2.2 Process Summary

The OU-1 P&T system extracts the affected groundwater, treats the affected groundwater in a low-profile air stripper, and discharges the treated effluent to a storm drain that passes along the west side of the site. The OU-1 P&T system contains wells, pumps, valves, trays, instruments, and electrical controls.

- There were originally three extraction wells located in the OU-1 landfill that pumped at a combined rate of approximately 100 gallons per minute. During the removal of the landfill between 2006 and 2010, the original three extraction wells were removed and were replaced by two extraction wells adjacent to Building 300. The new wells pump at a combined rate of approximately 30 gallons per minute.
- Submersible pumps in each extraction well pump groundwater to the treatment system building. The pipelines conveying the water are constructed of Schedule 80 PVC. Most of the pipe run is below ground, but a small portion of the pipe run, where the pipe enters the side of the building, is aboveground. The pipes join together at a manifold system.
- After the manifold, the water flows to a low-profile air stripper. In the air stripper, concentrations of the contaminants of concern are each reduced to less than the maximum contaminant level (generally less than 5 micrograms per liter, typically not detectable). The contaminants are transferred from the water to the air medium and exhausted outdoors through the air vent. The contaminants dissipate and decompose rapidly in the atmosphere.

- After passing through the stripper, the water enters a gravity-flow effluent pipe constructed of Schedule 80 PVC. The effluent pipe flows to a below-grade elliptical storm drain that runs along the west side of the site. The effluent flows into the Great Miami River, west of the site.

3.5.2.3 Groundwater Monitoring

The P&T system was designed to gain control of groundwater flow and contaminant transport within the groundwater beneath OU-1. Accordingly, certain measurements of the groundwater elevations and groundwater chemistry are made in certain nearby groundwater monitoring wells, as described in the O&M Plan, Section 4.4.3. The results of groundwater monitoring influence the operation of the system. Head measurements and concentration measurements each play a role.

3.5.2.4 Groundwater Quality and Hydraulic Monitoring

Groundwater quality and hydraulic monitoring, which are used to verify the satisfactory functioning of the P&T system, are described in the O&M Plan, Section 4.4.3. Hydraulic capture is determined through the use of a small network of wells located on the compliance boundary. These wells are used to perform a three-point evaluation for determining the gradient immediately downgradient of the P&T system. For assessment of the performance of the P&T system, samples of the plant influent and effluent are collected and analyzed for volatile organic compounds.

3.5.3 Phase I Remedy

The Parcel I remedy is defined in the ROD as ICs in the form of deed restrictions on future land and groundwater use and monitored natural attenuation. Groundwater in Phase I is monitored for TCE and its degradation products to verify that the concentration of TCE is decreasing due to natural attenuation and is not impacting the BVA. The O&M Plan, Section 4.4, describes how this monitoring is conducted.

3.5.4 Parcels 6, 7, and 8 Remedy

Groundwater in Parcels 6, 7, and 8 is monitored for TCE and its degradation products to verify that the downgradient BVA is not affected and that concentrations are decreasing. In addition, groundwater discharging from seeps is monitored for tritium and TCE and its degradation products to verify that the source removal that occurred during remediation will result in decreasing concentrations over time. The O&M Plan, Section 4.4, describes how this monitoring is conducted.

3.6 Institutional Controls

ICs are an important component of all of the remedies selected for the Mound site. As defined by EPA, ICs are non-engineered instruments, such as administrative and legal controls, that help to minimize the potential for exposure to contamination and/or protect the integrity of a response action.

The Mound site remedy includes the following ICs:

- Maintenance of industrial or commercial land use and prohibition against residential land use.
- Prohibition against the use of groundwater without prior written approval from EPA and Ohio EPA.
- Prohibition against the removal of soil from within the site boundary (as of 1998) to offsite locations without prior written approval from EPA, Ohio EPA, and ODH.
- Prohibition against the removal of concrete floor material in specified rooms of T Building to offsite locations without prior approval from EPA, Ohio EPA, and ODH.
- Prohibition against the penetration of concrete floors in specified rooms of T Building locations without prior approval from EPA, Ohio EPA, and ODH.
- Allowing site access for federal and state agencies for the purpose of sampling and monitoring.

The RODs and ESs listed in Table 2 provide detailed information on the remedies and development of the ICs.

The ICs are described as restrictions and covenants in the quitclaim deeds or as activity and use limitations in the Environmental Covenant. ICs are included in the EM-MDC lease agreement. ICs run with the land through subsequent property transfers. Quitclaim deeds with ESs and the Environmental Covenant are recorded with the Montgomery County, Ohio, Records Office to ensure that future property owners are aware of the rationale behind each deed restriction. A more-detailed discussion of ICs is included in the O&M Plan (DOE 2015b).

3.7 Post-CERCLA Excavations

The last prime remediation contractor, CH2M HILL Mound Inc., declared completion in July 2006. Remediation scope for the last two PRSs (7 and 441) was taken from that contract and added to the aRc contract for the OU-1 excavation. aRc completed the final remediation of PRS 441 in 2009 (aRc 2009). This ended all CERCLA-required actions for the site. aRc's OU-1 work that followed the *Response Action Plan for the Operable Unit One (OU-1) Landfill Area at the Miamisburg Closure Project* (DOE 2006b) that occurred from 2006 to 2010 was not a CERCLA-required action, but was funded by a congressional earmark and American Recovery and Reinvestment Act funding (aRc 2009; aRc 2010).

4.0 Property Transfer Process

The property was transferred from DOE to MDC according to the *DOE-Mound's Land Transfer Process* (DOE 1999g). The sales contract between DOE and MDC was first approved on January 23, 1998 (DOE 1998b); updated on August 28, 2008 (DOE 2008); and updated again in December (DOE 2012a). The sales contract established that DOE will convey the entire Mound site by discrete parcels, subject to CERCLA Section 120(h), "Property Transfer of Federal Agency." Ownership of the parcels was or will be transferred to MDC via a quitclaim deed with no repair, replacements, or rebuild of areas. Each parcel's quitclaim deed contains the

IC restrictions. The entire site has completed the CERCLA process and could be transferred to MDC.

EM has transferred parcels D, H, 3, 4, parts of Parcels 6A and 7, and Phase I (A, B, C) to MDC. Seven buildings (3, 87, 100, 102, 105, 126, the MDC Flex Building), five magazines (80 through 84), and a salt storage shed remain on those land parcels. DOE demolished all of the other site buildings on those parcels during the remediation process. MDC demolished the Guard Post 1 in Parcel 3, Buildings 2 and 63 in Parcel 7, Building 28 in Parcel 6, and the GH Building in Parcel 3.

In December 2012, MDC requested that EM withdraw its deed offer for Parcels 6–9. The parties entered into an amended sales contract (DOE 2012a) and Amendment Number 24 (DOE 2012b) to the general purpose lease agreement whereby the Government agreed to a 5-year delay in MDC’s acceptance of Parcels 6–9. The amendment states: “Lessee agrees to be responsible for all costs, expenses, maintenance, utility, and service charges of whatever sort as are needed or customarily supplied to maintain the structures and property in its current condition.”

In December, EM offered Parcel 6B (including the building at 955 Mound Road) to MDC, who sold it as Tracts 1 and 2 to BOI Solutions Inc. Details on the Montgomery County property identifications are included in an appendix to the O&M Plan, which is Volume 2 of the LTSP.

During this 5-year lease period, the City of Miamisburg is working closely with MDC to facilitate reuse of the Mound Site. In order to reduce the property tax burden, Miamisburg City Council passed Ordinance 6393 that stated, “An Ordinance authorizing the City Manager to enter into a property transfer agreement between the City of Miamisburg and the Mound Development Corporation and declaring an emergency.” Under this agreement, the City will accept temporary ownership of specific parcels and hold ownership until MDC can either lease or sell them.

In 2013, MDC subdivided their parcels and transferred ownership of most of them to the City of Miamisburg as shown in Figure 8. In December 2014, the City of Miamisburg transferred the parcel containing Building 100 at 790 Enterprise Court back to MDC. MDC then sold the property to The Drydek Group.

In January 2015, 22 structures remained on the Mound site. Table 4 details the DOE building identification and the Miamisburg street addresses for each building.

In February 2015, MDC filed revised parcel drawings with Montgomery County. These included several boundary changes with new parcel IDs. The revised parcel outlines are shown in Figure 8.

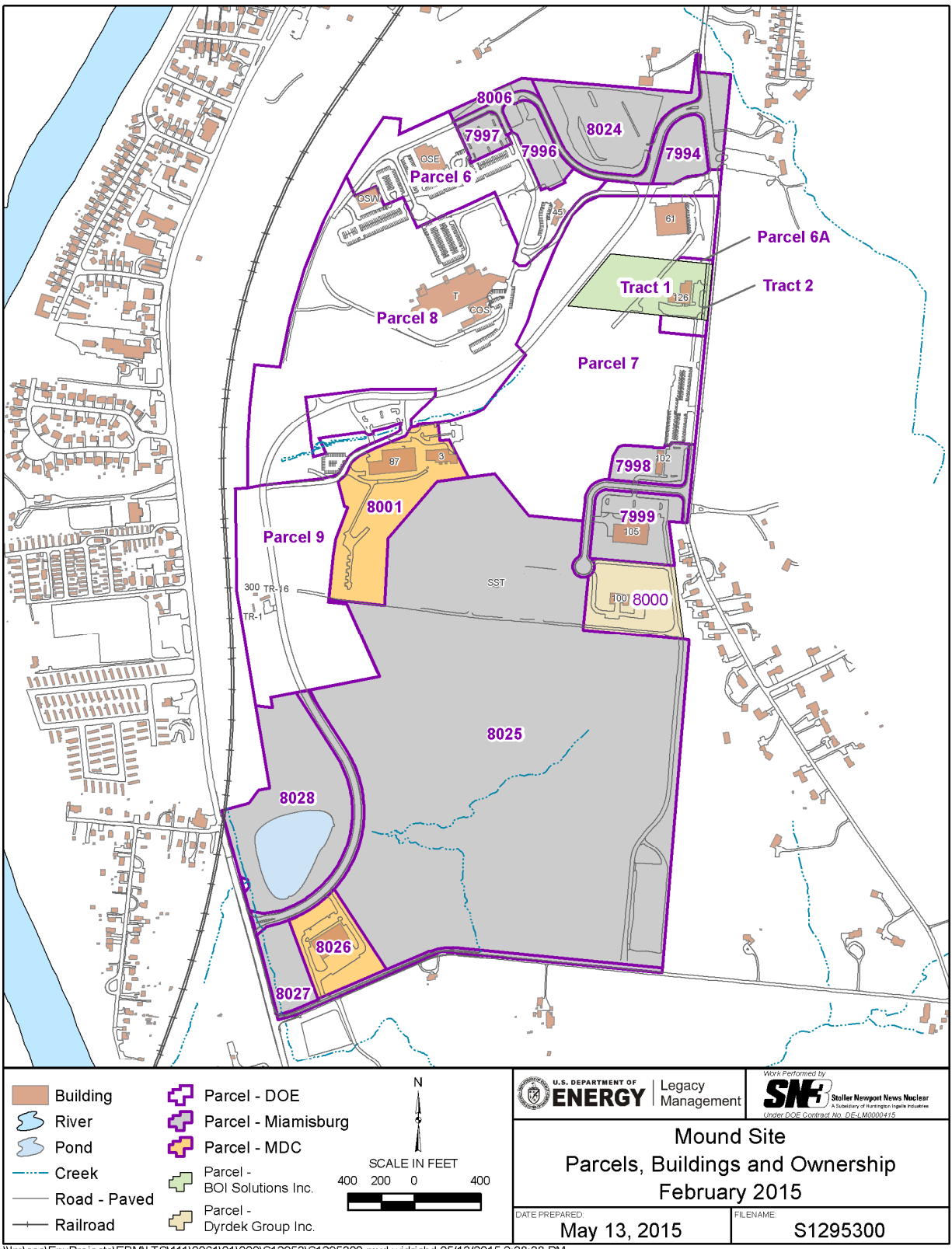


Figure 8. Mound Site Parcels, Buildings, and Ownership

Table 4. Buildings—Crosswalk of Street Addresses to DOE Building Identifications

DOE Building ID	Former Address	Current Miamisburg Street Address	ROD Parcel ID
45		930 Capstone Drive	6
61		885 Mound Road	7
87 and 3		1100 Vanguard Boulevard	IB ^a
100		790 Enterprise Court	D ^c
102		1075 Mound Road	IA ^a
105		1195 Mound Road	D ^a
126		955 Mound Road	6A and part of Parcel 7 ^b
COS		965 Capstone Drive	8
OSE	480 Capstone Circle	480 Vantage Point	6
OSW	460 Capstone Circle	460 Vantage Point	8
T Building		945 Capstone Drive	8
Salt Storage Structure	None	None	IB ^a
Magazines 80–84	None	None	IB ^a
Trailers 1 and 16, and Building 300	None	1275 Vanguard Boulevard	9
MDC Flex Building	1390 Vanguard Boulevard	1390 Vanguard Boulevard (main building)	4 ^a
		1388 Vanguard Boulevard (lighting)	
		1384 Vanguard Boulevard	
		1380 Vanguard Boulevard	
		1374 Vanguard Boulevard	
		1370 Vanguard Boulevard	

^a Parcel has been transferred to MDC.

^b In Tract 1 owned by BOI Solutions Inc.

^c In Parcel owned by Dyrdek Group, Inc.

5.0 Long-Term Surveillance and Maintenance

This LTS&M Plan identifies long-term commitments to operation and maintenance of the remedies selected in the RODs for the Mound site and describes how LM will fulfill those commitments. The specific activities required are described in the O&M Plan.

This LTS&M Plan refers to the established methods and procedures specific to the Mound site to control risk and maintain protectiveness. DOE will maintain protectiveness at the site through a combination of conducting regular inspections, conducting environmental sampling and other site operations, maintaining and enforcing ICs, and working with stakeholders and regulators to provide site awareness and knowledge of current conditions.

5.1 Roles and Responsibilities

This portion of the document summarizes the roles and the scope of responsibilities of DOE and other involved parties and how these roles relate to those of the regulators.

5.1.1 Role of DOE

During the lease period, EM and LM share the DOE responsibilities for the Mound site.

EM is responsible for overseeing the leased property (Parcels 6, 7, 8, and 9) until the site transfers to MDC. This includes all legal activities involving the lease and sales agreements, any major construction projects, and periodic building inspections. LM assists EM as requested.

EM is responsible for hazardous substances discovered that are attributable to previous DOE operations.

LM is responsible for ensuring that DOE's post-closure responsibilities are met and for providing DOE programs for long-term surveillance and maintenance, records management, workforce restructuring and benefits continuity, property management, land use planning, and community assistance.

LM—or its successors or assignees—is responsible for implementing, reporting on, monitoring, maintaining, and enforcing the ICs both before and after the transfer of the site to MDC.

LM is responsible for periodically reviewing the property development and for enforcing the ICs if any noncompliance is detected. These reviews are conducted in the annual IC assessments and CERCLA Five-Year Reviews, which are planned and conducted by DOE with participation by the property owners and regulators. Because of the long-lived nature of some of the residual contaminants remaining onsite, the federal government will provide surveillance and maintenance services at the Mound site for as long as remedies and ICs that are required to protect human health and the environment remain in effect.

LM and EM are responsible for responding to calls and inquiries from the public, regulators, and other stakeholders.

5.1.2 Role of the Property Owner

All property owners are responsible for IC compliance on their property, including areas that are leased to others. When accepting ownership, the property owner agrees to the restrictions and covenants in the quitclaim deeds or activity and use limitations in the environmental covenant.

The property owner is responsible for responding to any releases attributable to the property owner's operations.

The property owner is responsible for adhering to storm water and wetland regulations that apply to the site.

MDC manages and maintains all of the grounds and buildings, except for the BOI Solutions Inc. and Drydek Group, Inc. properties. LM maintains the structures and equipment in the OU-1 area.

5.1.3 Role of Regulators

EPA Region 5 and Ohio EPA will provide regulatory oversight for the Mound site. After the property is transferred, these agencies, in cooperation with ODH, are responsible for reviewing requests for activities prohibited by the ICs, such as soil removal, use of groundwater, or concrete penetration or removal in specific areas of T Building.

EPA, Ohio EPA, and ODH participate in annual site IC physical inspections and in the CERCLA Five-Year Reviews. DOE must obtain formal EPA concurrence to the results of the Five-Year Reviews.

5.1.4 Role of Stakeholders

Stakeholders may participate in DOE activities by reviewing documents, attending public meetings, and reporting concerns to DOE or regulatory agencies. Section 5.4 and the CIP provide more details on public participation.

5.2 Other IC Oversight Mechanisms

LM has worked with regulators and local and state entities to identify their formal and informal mechanisms that provide additional oversight of the site. The following processes that regulate, manage, monitor, and gather information can provide layers of protection to ensure IC compliance.

EM

- An amendment (DOE 2012a) to a 2008 sales agreement allows MDC to lease Parcels 6–9 for up to 5 years.
- Amendment 24 (DOE 2012b) to the general purpose lease agreement with MDC for Parcels 6–9 requires quarterly building inspections during the lease period.
- Appendix 1 to the general purpose lease agreement (DOE 2013a) with MDC for Parcels 6–9 requires compliance with the ICs during the lease period.
- Deed transfers (quitclaim deeds) that EM files with Montgomery County contain specific IC requirements that run with the land in the form of deed restrictions. The filing includes a copy of the ES for that parcel.
- Special Instrument Deed 2012-00004722, January 24, 2012, that includes the *Environmental Covenant* (DOE 2011b) and the *Parcel 9 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances, Final* (DOE 2011c), formalizes use restrictions and requires property owners to notify Ohio EPA of property changes.

LM

- FFA tripartite agreement with DOE, EPA, and Ohio EPA.
- O&M Plan requirements.
- Periodic assessments of effectiveness of the ICs (now annual).
- Periodic groundwater monitoring assessments (now annual).

- CERCLA Five-Year Reviews of remedy effectiveness.
- LM public website that includes contact information, site information, and both CERCLA and informational documents.
- 24-hour toll-free phone number.

MDC and Other Property Owners

- The *Comprehensive Reuse Plan Update* (MMCIC 2003), which covers topics such as soil handling and staging, states that “All improvements must conform to local building, planning, and zoning regulations. Exceptions to local requirements must be granted by the City. Land utilization for the MATC [Mound Advanced Technology Center] redevelopment will be guided by the Miamisburg Land Use Plan - 1990 Update” (Miamisburg 1990).
- Building lease documents that include ICs.

City of Miamisburg

- City Ordinance 5733, passed by the Miamisburg City Council on September 2, 2003 (Miamisburg 2003), which adopted MDC’s *Comprehensive Reuse Plan Update* (MMCIC 2003) as the City’s guide for review and approval of development of the Mound site.
- Codified ordinances that require City review and approval for certain activities such as construction, building occupancy, street openings, zoning modification requests, etc.
- The I-2 General Industrial District zoning requirement for the Mound site property as shown on the *City of Miamisburg Official Zoning Map* (Miamisburg 2012). For a copy of the map, see Appendix B City of Miamisburg Oversight Mechanisms Related to the Mound Site. Codified ordinances require public notification of requests for zoning or other usage changes, but they do not require review or approval by DOE, EPA, or Ohio EPA.
- City Ordinance 4368, passed by the Miamisburg City Council on December 18, 1990 (Miamisburg 1990), which approved the Miamisburg Land Use Plan - 1990 Update. One part of the plan is the Miamisburg *Future Land Use* map (see Appendix B), which shows industrial use for the Mound site property. (In that map, one area in Parcel 4 is not shown as industrial use; this error will be corrected when the plan is updated and approved by the City Council). This land use plan does not require review or approval by DOE, EPA, or Ohio EPA.
- City Ordinance 6393, passed by the Miamisburg City Council on April 16, 2013 (Miamisburg 2013), which authorized the city manager to enter into a property transfer agreement between MDC and the City.

Montgomery County

- A deed is a legal document that secures property ownership. The county auditor is responsible for maintaining the accuracy of these records by means of a "deed transfer" for every parcel of real estate in Montgomery County. This procedure is required for the transfer to be considered a legal transaction.
- County recorder’s office documents the deed transfers.

- County auditor maintains the property tax records.
- Combined Health District regulates private water systems.

EPA

- FFA—tripartite agreement with DOE, EPA, and Ohio EPA.
- CERCLA Five-Year Review requirements.

State of Ohio

- FFA—tripartite agreement with DOE, EPA, and Ohio EPA.
- Ohio EPA monitoring for potential new wells for public water systems. Chapter 6109 of the Ohio Revised Code (ORC) requires Ohio EPA approval before installation of Public Water Systems.
- ODH regulation of potential new wells for private water systems. Private water systems are regulated by the ODH and administered by both ODH and the local health districts under Sections 3701.344 to 3701.347 of the ORC and Chapter 3701-28 of the Ohio Administrative Code. Requires a permit application to the local health district prior to the construction, alteration, or sealing of any private water system.
- Ohio Department of Natural Resources requirement to register a well within 30 days of drilling.

Mound Science and Energy Museum

- CERCLA Reading Room.
- Information on the site's history.
- Public educational programs on Mound site history or other scientific or historical information.

5.3 Revisions to the Plans

LM is responsible for the preparation, revision, update, and implementation of the LTSP. LM will review the LTS&M, O&M Plan, and CIP annually and will update them as necessary. Changes in the O&M Plan will require regulatory approval before they are implemented. LM will notify the regulators when changes are made to the LTS&M and CIP.

LM will evaluate the results of each Five-Year Review, and in consultation with EPA and Ohio EPA, will determine if the O&M Plan requires changes.

5.4 Public Participation and Communication

The CIP in Volume 3 documents how LM will ensure public involvement in post-closure activities at the Mound site. The community relations activities follow EPA and DOE guidance on public participation and comply with the CERCLA public participation requirements, as amended by SARA. LM will review the CIP annually and update it as required.

Promoting public involvement in the surveillance and maintenance process at the Mound site ensures that citizens' concerns are addressed and that relevant public information is provided. Active citizen involvement also promotes understanding of, and encourages informed participation in, the project by the general public. DOE encourages public participation by providing site information via public and DOE contacts, issuing documents for public comment, and holding public meetings.

5.4.1 DOE Contacts

Contact information for the DOE staff responsible for implementing the LTS&M program will be posted on the LM public website and published in the CIP.

DOE will update the contact list as necessary to reflect the most current contact information. Updates to this list are minor and will not cause the issuance of a revision to the LTS&M Plan.

DOE LM 24-Hour Monitored Security Telephone Numbers (Grand Junction, Colorado)
(877) 695-5322 or (970) 248-6070.

Website: <http://www.lm.doe.gov/Mound/Sites.aspx>

General site inquiries: (513) 648-5051

Email: Mound@lm.doe.gov

5.4.2 Contact Lists

The CIP contains the official contact list for LM personnel, regulators, and the current property owners who have some responsibility or oversight of the Mound site. The list also includes other public and key community leaders, including federal, state, and local government officials, who have some jurisdiction or interests in the site. DOE will review this list at least annually and will update it as required. The contact list includes individuals from the following entities:

- Legislative and executive branch officials (federal, state, and local).
- EPA Region 5.
- Ohio EPA and ODH.
- MDC and other property owners.
- City of Miamisburg, Ohio, officials.
- Miami Township and Montgomery County officials.
- Miamisburg Environmental Safety & Health.
- Mound Science and Energy Museum.

5.4.3 Stakeholder Database

LM maintains an official LM stakeholder database that is used to inform interested stakeholders of LM and Mound site activities. The stakeholder database includes the official contact list and media contacts and is updated as needed.

5.5 Site Inspections

LM conducts routine physical inspections of the site, the groundwater monitoring system components, and the P&T operation. LM will also assess the effectiveness of the remedies to ensure that the controls remain protective. These assessments and inspections will:

- Confirm compliance with the ICs.
- Confirm that treatment and monitoring systems are operating correctly.
- Confirm that target criteria for the remedies have been met.
- Determine if maintenance or additional monitoring is needed.

Details of the inspections, frequency, scope, and reporting are included in Section 3.7 of the O&M Plan. Periodic site inspections and assessments include:

- Assessment of IC effectiveness.
- Groundwater monitoring.
- CERCLA Five-Year Review.
- P&T inspection.

LM or its designated agent will perform inspections and assessments. Inspectors will be experienced engineers or scientists who have the required knowledge, skills, and abilities to evaluate site conditions and recognize potential or actual problems. Inspectors will be assigned for a given inspection of the Mound site on the basis of site conditions and inspector expertise. Areas of expertise may include civil, geotechnical, and geological engineering; geology, hydrology, biology, and environmental science (e.g., ecology, soils, or range management). If conditions warrant, LM may assign other inspectors to evaluate serious or unusual problems and make appropriate recommendations.

5.5.1 Assessment of IC Effectiveness

LM will periodically assess the effectiveness of the Mound site's ICs and prepare a summary report of the results. These assessments determine whether the ICs continue to function as designed, adequate oversight mechanisms are in place to identify possible violations of ICs, and adequate resources are available to correct or mitigate any problems if violations occur.

These assessments examine changes that could indicate an IC violation, such as nonindustrial use, unapproved use of groundwater, unapproved soil removal, or unapproved penetration or removal of concrete from special T Building areas. Appendix D, "Mound Site Groundwater Monitoring Wells," lists the site wells and their Ohio Department of Resources identification number. This information is updated and used to track new well installations. The O&M Plan Section 3.6.1 provides the details of the IC assessments.

5.5.2 Groundwater Monitoring

LM will monitor groundwater in Phase I and Parcels 6, 7, and 8 in accordance with Section 4 of the O&M Plan and present the results in an annual groundwater monitoring report. The report will include the groundwater monitoring information, analytical results, trend analyses, data

interpretations, and operational changes from the previous calendar year. The report will also document the progress of the natural attenuation remedy toward meeting the remedial objectives and identify any maintenance or repair activities associated with the monitoring wells or seeps.

At this time, the final OU-1 groundwater strategy for Parcel 9 has not been finalized. LM is conducting additional monitoring, and DOE, EPA, and Ohio EPA continue to evaluate those results. The results and analysis of this monitoring are currently presented in the ER Monthly Progress Report.

When the OU-1 monitoring plan has been finalized and accepted by the regulators, LM will propose adding the OU-1 Parcel 9 groundwater monitoring strategy to the O&M Plan and adding the results to the annual groundwater monitoring report.

5.5.3 OU-1 P&T System Inspection

The OU-1 P&T system is maintained and inspected according to the *Mound OU-1 Pump-and-Treat System Operation and Maintenance Procedure* (DOE 2013c). DOE conducts periodic inspections of the P&T system operation and maintenance records and logbooks for completeness and for information about system performance.

5.5.4 CERCLA Five-Year Review

As lead agency, LM is responsible for conducting the CERCLA Five-Year Reviews of site remedies and for preparing reports in accordance with the most recent EPA guidance. LM will work closely with EPA during the reviews. EPA will either concur with the LM review results and protectiveness determinations or will develop independent determinations.

The CERCLA Five-Year Review substantiates that the remedies remain protective of human health and the environment. The Five-Year Review report also will serve as the principle mechanism for monitoring, evaluating, improving, and reporting on all long-term management activities, including O&M, long-term monitoring, IC monitoring and enforcement, community involvement, information systems, contingency actions, and post-ROD changes.

The Five-Year Review report will include the results of the previous five annual inspections and environmental monitoring results. The report will evaluate the remedy performance and present recommendations for modifying the surveillance and maintenance program, implementing corrective action, or revising the selected remedies.

5.5.5 Follow-Up Inspections

Follow-up inspections are unscheduled inspections that are conducted in response to threatening or unusual site conditions. LM may conduct follow-up inspections if the following occurs:

- A condition is identified during the routine site inspection or other site visit that requires personnel with specific expertise to return to the site to evaluate the condition.
- DOE is notified by a citizen, employee, or federal, state, or local agency that conditions at the site are substantially changed from the previous inspection.

When a condition or concern is identified at the site, LM personnel will evaluate the information and decide whether to respond with a follow-up inspection. LM may request the assistance of local authorities (i.e., law enforcement, fire protection, city engineer) to provide an initial visual reconnaissance and confirm the seriousness of a reported condition at the site before scheduling a follow-up inspection. LM will notify EPA and Ohio EPA of a follow-up inspection upon identifying the need for the inspection.

Specific conditions that may necessitate a follow-up inspection include violation of ICs, vandalism, or the need to revisit the site to evaluate, define, or conduct unscheduled or emergency maintenance tasks. Conditions that may require a more immediate follow-up inspection include extreme weather, seismic events, and disclosure of deliberate human activity that threatens the integrity of physical structures (e.g., treatment facilities, monitoring well). DOE will evaluate risk when scheduling follow-up inspections. Urgency of the follow-up inspection will be in proportion to the seriousness of the condition. Inspectors assigned to follow-up inspections will be selected using the same criteria as for routine site inspections.

If an incident or activity threatens or compromises ICs or poses a risk of exposure to or release of known contaminants, LM will follow the procedures outlined in the O&M Plan (DOE 2015b) or the actions identified in Section 5.8, “Emergencies, Contingency Planning, and Corrective Action.”

Results of follow-up inspections will be included in the next annual inspection report. Separate reports will not be prepared unless DOE determines it advisable to notify EPA, Ohio EPA, or another outside agency of a situation at the site that remains uncorrected.

If follow-up inspections are required for more serious reasons, LM will submit a preliminary report of the follow-up inspection to EPA, Ohio EPA, and MDC within 120 days. These reasons may include situations that could result in a compromise or failure of a treatment or containment system or situations that could result in unacceptable risk to the public or the environment. Copies of those reports will be posted on the LM public website.

5.6 Reporting

LM will prepare and distribute monthly, annual, and Five-Year Review reports as described in Section 6 of the O&M Plan. LM also posts the annual and Five-Year Review reports on the LM public website.

5.7 Site Maintenance

5.7.1 OU-1 P&T System

LM will continue to maintain the OU-1 P&T system in standby mode as long as it is required as part of the remedy. The P&T system, when operating, extracts groundwater, treats it in a low-profile air stripper, and discharges the treated effluent. Section 4.4.3 of the O&M Plan details the operations of the P&T system and the associated groundwater monitoring.

The P&T system consists of a system of wells, pumps, valves, trays, piping, instruments, and electrical controls. The *Mound OU-1 Pump-and-Treat System Operation and Maintenance*

Procedure (DOE 2013b) details the requirements and procedures for regular inspection, maintenance of equipment, and review of routine documentation (logs, forms, etc.), all of which are required for continued effective operation of the system.

LM samples the effluent from the P&T plant, also known as Outfall 003, using an automatic sampler located in Building 300. The operation and maintenance of this sampler is described in the P&T System Procedure (DOE 2013b). The performance of the treatment system will be assessed by sampling both the influent and effluent of the treatment plant as outlined in Section 4.4.3 of the O&M Plan.

5.7.2 Trailers 1 and 16, Building 300

LM will maintain the OU-1 P&T system support building and trailers as long as they are required for the remedy.

5.7.3 Site Monitoring Wells

LM monitoring personnel will note maintenance needs and ensure that the wells are kept secure and in good repair during routine sampling events. LM will maintain access to sample locations, which may include maintenance of access routes (i.e., gravel repair of paths and roads) and vegetation control around wells and access routes. LM will conduct maintenance at offsite locations in accordance with access agreements.

5.7.4 Seeps

LM monitoring personnel will note maintenance needs of seeps and arrange for needed maintenance, such as access to the seep. LM will periodically review access agreements for offsite seeps.

5.8 Emergencies, Contingency Planning, and Corrective Action

DOE conducted an uncertainty analysis in 2003 with input from EPA, Ohio EPA, ODH, MDC, and the City of Miamisburg. Results were issued in *Uncertainty Analysis of Land Use Controls at the Mound Plant*, September 2003 (DOE 2003c). The uncertainty analysis was conducted to:

- Identify uncertainties associated with land use controls.
- Evaluate probabilities and potential impacts.
- Develop draft priorities.
- Attain Core Team consensus on prioritization of scenarios.
- Discuss uncertainty management planning.

The findings of the analysis are documented in an uncertainty management matrix in the report. The Core Team considered the probability and the impact of occurrence for each risk scenario, prioritized uncertainties, and identified two risk scenarios as having the highest priority for management:

- Exposure due to presence of an unknown contamination onsite. For this scenario, the RREs used final characterization data for each parcel to evaluate the health risk to workers from exposure to residual contamination for a duration of time consistent with the activities expected to take place at the site. It was determined that there are no unacceptable risks to workers.
- The risk of soil movement offsite without approval, leading to potential exposure to contamination. For this scenario, although the probability of soil being removed at some point was high, the probability of removing a hot spot that would result in a health impact was low.

DOE incorporated this analysis and subsequent discussions into contingency planning for future surveillance and maintenance at the site. DOE responses to these types of incidents, summarized in Appendix A, are outlined in the O&M Plan and in the Legacy Management Support (LMS) contractor's *Incident Reporting and Fact-Finding Meeting Procedure* (LMS/POL/S11736).

Site inspections, monitoring, and maintenance activities are designed to identify potential problems before they develop into a need for corrective action. However, in the unlikely case that extreme natural events, vandalism, or unanticipated events result in a need for corrective actions, LM will notify EPA, Ohio EPA, and other affected parties as soon as an emergency situation is known. If a major IC violation has occurred, DOE will refer the matter to the U.S. Department of Justice (DOJ) for enforcement.

The public may use the 24-hour Security telephone numbers monitored at the LM office in Grand Junction [(970) 248-6070 or (877) 695-5322].

5.9 Records and Data Management

The retention of records and dissemination of information over the long term is a critical aspect of legacy management. LM manages records needed for LTS&M purposes at the LM Business Center in Morgantown, West Virginia, a National Archives and Records Administration–certified facility for the storage of federal records. Records are maintained with the use of an electronic recordkeeping system.

Records and data required for LTS&M purposes could include information such as historical data, site characterization and remediation records, ARs, monitoring data and reports, inspections, and public affairs activities.

5.9.1 Pre-LTS&M Records and Data Collection

LM maintains copies of selected records near the site because they contain information necessary to demonstrate compliance with legal requirements and to ensure the continued management and follow-on actions and controls (including property management) required to protect public health and the environment. Some of these records are available on the LM public website (www.lm.doe.gov) as described in Appendix C. The LM records collection does not include

pre-EM records that document past operations or employee or public health and safety issues with respect to former site operations.

Site EM records are maintained at the LM Business Center. LM maintains indexes and disposition information to facilitate ongoing retrieval of records. In addition, LM will have custody of site documents residing in the Federal Records Center and will be notified prior to the destruction of any temporary records.

5.9.2 LTS&M Records and Data Collection

LM creates and maintains records related to LTS&M activities, including remedy performance and IC assessment, according to approved DOE records disposition schedules and following federal law and DOE-specific records guidance. A collection of Mound site-related documents available for public release is available on the LM public website (<http://www.lm.doe.gov/mound/Sites.aspx>).

Electronic data and information required to support LTS&M activities are available to the public through the Geospatial Environmental Mapping System (GEMS) software application on the LM public website (<http://www.lm.doe.gov/mound/Sites.aspx>). GEMS provides site mapping and environmental data (e.g., boundaries, structures, and wells).

When Parcels 6, 7, 8, and 9 transition to MDC, EM will transfer custody of all the remaining original real property records to LM. Federal real property specialists may have access to these records.

5.9.3 Administrative Record and Information Repository Access

DOE is required to maintain a copy of the CERCLA AR pursuant to its lead agency status as authorized by Executive Order 12580, *Superfund Implementation*. The AR is a subset of the Information Repository, which consists of documents relating to the site remediation and additional useful reference documents. These documents are available on the LM public website.

The FFA and CERCLA regulations also state that DOE shall establish and maintain an AR at or near the site. LM will provide access at the Public Reading Room (currently located at the Mound Science and Energy Museum, 1075 Mound Road, Miamisburg, Ohio) as long as needed after closure of the Mound site. When the physical Reading Room is dismantled, LM will continue to provide access to the documents electronically on the LM public website. As required by the FFA, LM will make the CERCLA Information Repository documents available at least 10 years past termination of the FFA and retain them according to the applicable DOE records retention schedules. DOE will then determine the need to maintain public access to the record copy or digital copy currently on the LM public website and will take any action required. Appendix C includes guidance for accessing documents in the Mound site AR via the LM public website.

5.9.4 Regulatory Requirements

Project records are maintained in full compliance with DOE requirements, including the following:

- 36 CFR 1220–1238, “National Archives and Records Administration”
- 44 USC 29, “Records Management by the Archivist of the United States and by the Administrator of General Services”
- 44 USC 31, “Records Management by Federal Agencies”
- 44 USC 33, “Disposal of Records”

The DOE Records Disposition Schedules provide the authority for the transfer or disposal of records created and maintained by DOE. The Disposition Schedules, and the citations to the disposition authorities, are available on the DOE website on the Chief Information Officer page (<http://energy.gov/cio/office-chief-information-officer>).

5.9.5 Freedom of Information Act (FOIA) and Privacy Act (PA) Record Requests

Information on the FOIA and PA requests for records is located on the LM public website <http://www.lm.doe.gov/foiarequests.htm>, the DOE website, and in Appendix C.

5.10 Health and Safety

Health and safety procedures for LM activities are consistent with DOE orders, regulations, applicable codes, and standards. The LM Integrated Safety Management System process serves as the basis for the LMS contractor’s health and safety programs. For the purposes of integrated safety management, the definition of safety encompasses safety, health, and environmental protection, including pollution prevention and waste minimization.

Contractors and subcontractors performing work for LM at the Mound site are required to comply with the LMS contractor’s *Health and Safety Manual*. Work activities are controlled through the job safety analysis (JSA) process using the Integrated Safety Management System’s five core functions for work planning and control to define the scope of work for a specific work activity, analyze the hazards identified with the activity, and develop and implement controls and protective equipment to mitigate those hazards. Work activities are performed within the controls of the JSA, and personnel are requested to provide feedback and suggestions for continual improvements during the work process. Project personnel are required to review and understand the JSA prior to the start of work and add any additional identified hazards or concerns to the JSA, thereby integrating safety management into the workplace.

5.11 Quality Assurance

The Mound site is obligated to comply with DOE Order 414.1D, *Quality Assurance*, and 10 CFR 830, Subpart A, “Quality Assurance Requirements.” These requirements are documented in accordance with DOE plans to ensure that work performed at facilities that handle, process, or use radioactive materials is of documented quality.

Quality assurance requirements and protocols for Mound site monitoring operations and environmental monitoring are contained in the O&M Plan (DOE 2015b).

Mound site-specific environmental sampling requirements are incorporated into the *Fernald Preserve and Mound, Ohio, Sites Environmental Monitoring Procedures* (DOE 2014a). This document is a compilation of the necessary performance and quality requirements associated with environmental monitoring activities associated with the Mound site. These procedures also provide instruction to ensure that data generated through the environmental sampling programs outlined in the O&M Plan are stored and maintained as records.

5.12 Budgeting and Funding

DOE will request adequate funds to maintain the remedies specified in the RODs for this site and will provide appropriated funds to conduct long term surveillance and maintenance as part of an annual congressional appropriation. Total funding to implement the LTS&M program described in this Plan is estimated to be approximately \$1,000,000 a year in 2014 dollars. This funding will be adjusted as needs change.

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Appendix A

Mound Site Contingency Preparations and DOE Response Actions

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Table A-1. Contingency Preparations and Response Actions

Incident	Potential Impact	Oversight Mechanisms	DOE Response Actions
Institutional Control Violations			
Site is used for other than industrial use.	Unacceptable exposure to residual radiological and/or chemical constituents in soil.	<ul style="list-style-type: none"> • Operations and Maintenance (O&M) Plan (DOE 2015b) requirements including institutional control (IC) assessments and Appendix C, "ICs Guidance by Core Team (Including Soil Removal Protocol) and Site Use Request Form." • U.S. Environmental Protection Agency (EPA) requirements for the U.S. Department of Energy (DOE) to conduct Five-Year Reviews. • DOE Office of Environmental Management General Purpose Lease Amendment #24 and Appendix #1 that require quarterly building inspections and require IC compliance during lease period. 	<p>DOE will:</p> <ul style="list-style-type: none"> • Follow procedures in the <i>Incident Reporting and Fact-Finding Meeting Procedure</i> (LMS/POL/S11736). • Discuss violation with property owner. • Consult with EPA, Ohio EPA, and Ohio Department of Health (ODH) to evaluate the impact of the violation. • Refer the matter to the U.S. Department of Justice (DOJ) for enforcement, if necessary.
Soil is moved offsite without approval.	Soil may be used in areas that do not meet the industrial use scenario, resulting in unacceptable exposure to residual radiological and chemical constituents in soil.	<ul style="list-style-type: none"> • Quitclaim deeds and Limited Warranty deeds recorded with the County. • <i>Environmental Covenant</i> recorded with County as Special Instrument Deed 2012-00004722. • Mound Development Corporation (MDC) <i>Comprehensive Reuse Plan Update</i> (MMCIC 2003). • <i>City of Miamisburg Official Zoning Map</i> (included in Appendix B). • Miamisburg Land Use Plan – 1990 Update, including the <i>Future Land Use</i> map (included in Appendix B). 	<p>DOE will contact Ohio EPA and ODH to determine if regulatory approval had been obtained for the removal of soil.</p> <p>If prior approval had not been obtained, DOE will:</p> <ul style="list-style-type: none"> • Follow procedures in the <i>Incident Reporting and Fact-Finding Meeting Procedure</i>. • Discuss violation with property owner. • Consult with EPA, Ohio EPA, and ODH to evaluate the impact of the violation. • Refer the matter to DOJ for enforcement, if necessary.
Boundaries of the site are lost over time.	Nonindustrial land use could result in unacceptable exposure to residual radiological and chemical constituents in soil.	<p>Items above plus:</p> <ul style="list-style-type: none"> • Montgomery County, Ohio, legal requirements for property transfer. 	<p>DOE will verify the site boundary to determine if a violation has actually occurred.</p> <p>If a violation has occurred, DOE will:</p> <ul style="list-style-type: none"> • Follow procedures in the <i>Incident Reporting and Fact-Finding Meeting Procedure</i>. • Discuss violation with property owner. • Consult with EPA, Ohio EPA, and ODH to evaluate the impact of the violation. • Refer the matter to the DOJ for enforcement, if necessary.

Table A-1 (continued). Contingency Preparations and Response Actions

Incident	Potential Impact	Oversight Mechanisms	DOE Response Actions
Use of the onsite groundwater or seeps.	Exposure (dermal contact, inhalation, etc.) or uptake of radiological and chemical constituents could result in unacceptable exposure to residual radiological and chemical constituents.	Items above plus: <ul style="list-style-type: none"> • New wells must be registered on the Ohio Department of Natural Resources well log system within 30 days of drilling. • Private water systems are regulated by ODH and administered by both ODH and the local health districts under Sections 3701.344 to 3701.347 of the Ohio Revised Code and Chapter 3701-28 of the Ohio Administrative Code. • A permit application is required to be submitted, with fees, to the local health district prior to the construction, alteration, or sealing of any private water system. • Public water systems require Ohio EPA approval before installation in accordance with Chapter 6109 of the Ohio Revised Code. 	DOE will contact Ohio EPA and ODH to determine if regulatory approval had been obtained for use of the groundwater or seeps. If prior approval had not been obtained, DOE will: <ul style="list-style-type: none"> • Follow procedures in the <i>Incident Reporting and Fact-Finding Meeting Procedure</i>. • Discuss violation with property owner. • Consult with EPA, Ohio EPA, and ODH to evaluate the impact of the violation. • Refer the matter to the DOJ for enforcement, if necessary.
Concrete is penetrated or removed from special IC areas of T Building.	Unacceptable exposure to residual radiological constituents.	<ul style="list-style-type: none"> • O&M Plan – Appendix B, “T Building Special IC Areas - Core Team Agreement, Position Paper, and Floor Plan Figure” (DOE 2015b). 	DOE will contact Ohio EPA and ODH to determine if regulatory approval had been obtained. If prior approval had not been obtained, DOE will: <ul style="list-style-type: none"> • Follow procedures in the <i>Incident Reporting and Fact-Finding Meeting Procedure</i>. • Discuss violation with property owner. • Consult with EPA, Ohio EPA, and ODH to evaluate the impact of the violation. • Refer the matter to DOJ for enforcement if necessary.
Miscellaneous Events			
The storm water retention pond is used for recreational purposes (i.e., continued incidents of fishing or swimming).	Excessive dermal contact, inhalation, consumption, etc., could result in unacceptable exposure to residual radiological and chemical constituents.	Items above plus: <ul style="list-style-type: none"> • O&M Plan – Appendix C, “ICs Guidance by Core (Including Soil Handling Protocol) and Site Use Request Form” (DOE 2015b). • MDC or property owner will monitor and discourage unauthorized use. 	DOE will: <ul style="list-style-type: none"> • Discuss violation with property owner to rectify. • Consult with EPA, Ohio EPA, and ODH to evaluate the impact of the violation. • Refer the matter to DOJ for enforcement if necessary.

Table A-1 (continued). Contingency Preparations and Response Actions

Incident	Potential Impact	Oversight Mechanisms	DOE Response Actions
A buried drum (or other unknown material) is unearthed during soil excavation activities.	Exposure (dermal contact, inhalation, etc.) could result in unacceptable exposure to residual radiological and chemical constituents.	<ul style="list-style-type: none"> • “Construction Procedures” in the MDC <i>Comprehensive Reuse Plan Update</i> (MMCIC 2003). • DOE Office of Legacy Management emergency contact number is monitored 24/7. 	The property owner will: <ul style="list-style-type: none"> • Cease excavation/ construction activities. • Isolate the area from the public. • Contact the DOE emergency contact number. DOE will: <ul style="list-style-type: none"> • Follow procedures in the <i>Incident Reporting and Fact-Finding Meeting Procedure</i>. • Investigate and address the incident.

Abbreviations:

DOE = U.S. Department of Energy
 DOJ = U.S. Department of Justice
 EPA = U.S. Environmental Protection Agency
 IC = institutional control
 LM = Office of Legacy Management
 MDC = Mound Development Corporation
 O&M = operations and maintenance
 ODH = Ohio Department of Health

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Appendix B

City of Miamisburg Oversight Mechanisms Related to the Mound Site

This appendix contains copies of the following:

- City of Miamisburg Ordinance 4368 approved on December 18, 1990, which approved the Miamisburg Land Use Plan - 1990 Update.
- The Miamisburg *Future Land Use* map, which is part of the Miamisburg Land Use Plan - 1990 Update. The map shows one area of the Mound Site as not being zoned Industrial. The City has said this error will be corrected when the plan is updated.
- City of Miamisburg Ordinance 5733, approved on September 2, 2003, which adopted an update to the Mound Comprehensive Reuse Plan to serve as a guide for review and approval of development of the Mound Site.
- *City of Miamisburg Official Zoning Map* of 2012, which shows that the entire Mound Site is zoned as “I-2, General Industrial District.”
- City of Miamisburg Ordinance 6393, approved on April 16, 2013, which authorized the city manager to enter into a property transfer agreement between the City of Miamisburg and the Mound Development Corporation.

Mike G

ORDINANCE No. 4368

AN ORDINANCE APPROVING THE LAND USE PLAN FOR THE CITY OF MIAMISBURG DATED SEPTEMBER, 1990.

WHEREAS, the City of Miamisburg desires to revise the Land Use Plan adopted October 17, 1977, and

WHEREAS, the City of Miamisburg wishes to develop in a orderly manner, and

WHEREAS, providing those individuals having an interest in the development of the community a clear understanding of the City's land use goals and objectives is necessary to achieving orderly development, and

WHEREAS, the Miamisburg City Council and Planning Commission held public meetings to solicit input into the Plan, and

WHEREAS, at its November 5, 1990 meeting, the Miamisburg Planning Commission unanimously voted to adopt the Comprehensive Plan Update and to transmit that Plan to the Miamisburg City Council for its adoption,

NOW THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF MIAMISBURG, STATE OF OHIO, THAT:

Section 1.

The Council of the City of Miamisburg hereby adopts the Land Use Plan Update for the City of Miamisburg dated September, 1990, retaining the right to modify, alter or improve upon said Plan in appropriate circumstances in accordance with the laws, statutes, charter and ordinances of the City of Miamisburg.

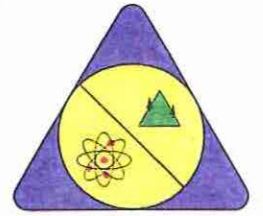
Section 2.

This measure shall take effect and be in force from and after the earliest period allowed by law.

Passed: December 18, 1990 Attested: Suzanne J. Baker
Acting Clerk of Council

Approved: Don Lucas
Mayor

MIAMISBURG OHIO



FUTURE LAND USE

PRIMARY STUDY AREA 1990 - 2000

- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- PARKS & OPEN SPACE
- PUBLIC / SEMI-PUBLIC
- INDUSTRIAL
- COMMERCIAL
- OFFICE / PROFESSIONAL SERVICES
- CENTRAL BUSINESS DISTRICT

SECONDARY STUDY AREA 2000 - 2010

- RESIDENTIAL
- NON-RESIDENTIAL
- PUBLIC / SEMI-PUBLIC
- PARKS & OPEN SPACE

**Barge
Waggoner
Summer and
Cannon**

SCALE
ONE INCH EQUALS 1000 FEET

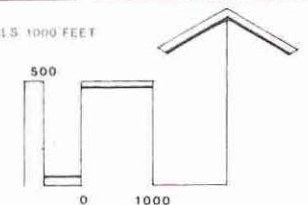
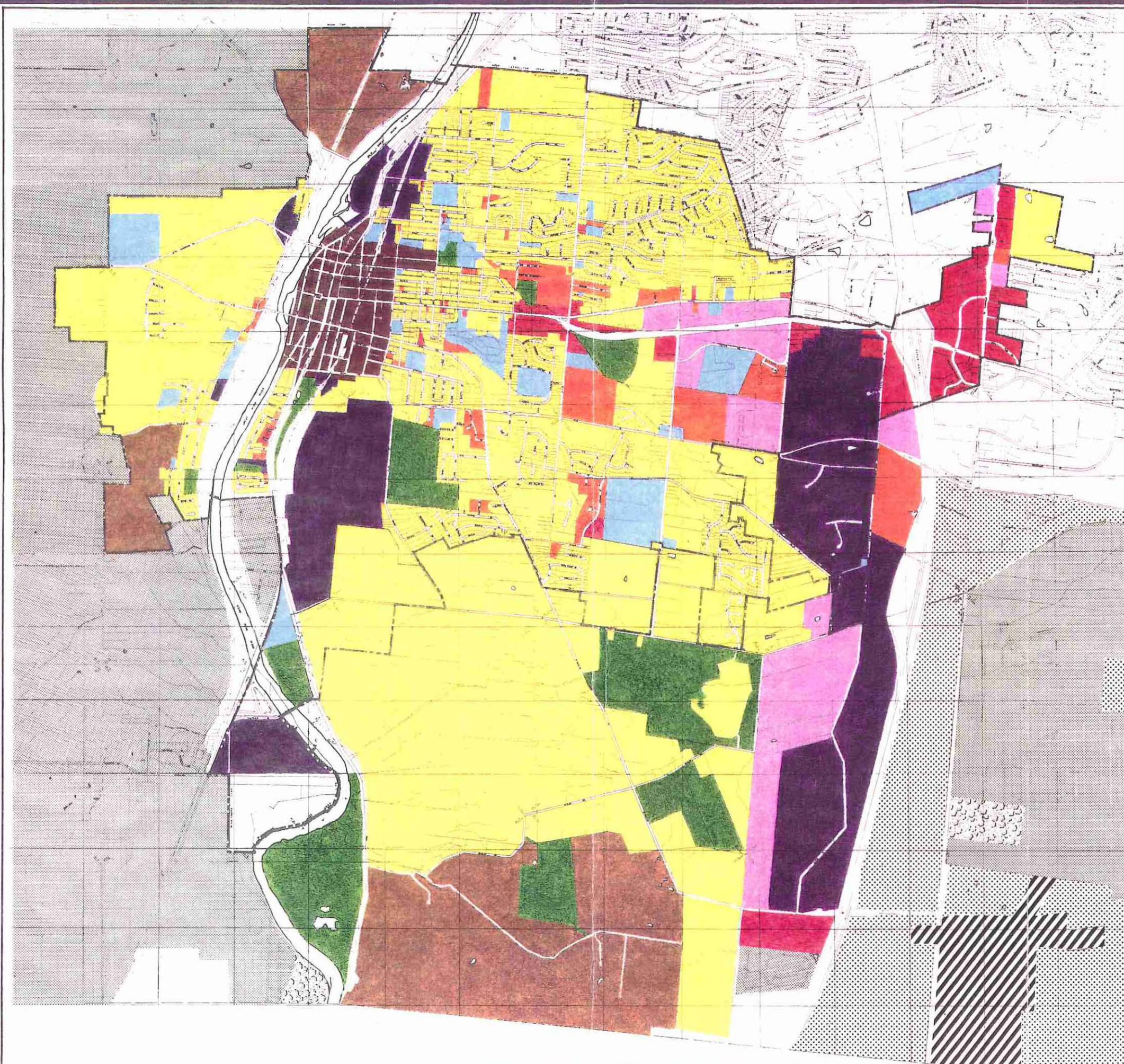


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ORDINANCE NO. 5733

AN ORDINANCE ADOPTING AN UPDATE TO THE MOUND COMPREHENSIVE REUSE PLAN AND DECLARING AN EMERGENCY.

- WHEREAS, The City of Miamisburg has undertaken numerous efforts and activities to transition the Department of Energy's Mound Facility from defense production to a privately owned industrial development, and
- WHEREAS, These efforts have been focused upon ensuring the property is converted to its best use, achieving the economic development objectives of the community and replacing the economic and fiscal losses that are being effected by the closure of the Mound facility, and
- WHEREAS, The Mound Comprehensive Reuse Plan Update provides for a project implementation plan, including cost and schedule, whose scope includes detailed work elements, re-evaluating of the Reuse Plan based upon building transfer list and market issues, redesign of infrastructure, integrated marketing approach and optimization of developable land, and
- WHEREAS, The Mound Comprehensive Reuse Plan reflects the strategy for transitioning the Mound facility to environmentally clean site and the vision for creating an economically viable, contemporary private research and industrial park, and
- WHEREAS, The Mound Comprehensive Reuse Plan, and the addendums and update thereto reflect the joint efforts and joint interests of the community, MMCIC and DOE in achieving the vision, and
- WHEREAS, The Council of the City of Miamisburg has previously adopted the goals and objectives of the Mound Comprehensive Reuse Plan (Resolution No. 2312), and
- WHEREAS, The Council of the City of Miamisburg has previously adopted the Mound Comprehensive Reuse Plan (Ordinance No. 5150), and
- WHEREAS, The Council of the City of Miamisburg has previously adopted an addendum to the Mound Comprehensive Reuse Plan (Ordinance No. 5382), and
- WHEREAS, The Council of the City of Miamisburg has previously adopted a second addendum to the Mound Comprehensive Reuse Plan (Ordinance No. 5594), and

NOW THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF MIAMISBURG, STATE OF OHIO, A MAJORITY OF THE ELECTED MEMBERS THERETO CONCURRING THAT:

Section 1.

The Council of the City of Miamisburg hereby adopts the update to the Mound Comprehensive Reuse Plan as set forth in the "Miamisburg Mound Comprehensive Reuse Plan Update," retaining the right to modify, alter or improve upon said Plan in appropriate circumstances in accordance with the laws, statutes, charter and ordinances of the City of Miamisburg.

Section 2.

The Mound Comprehensive Reuse Plan Update shall serve as a guide for review and approval of development of the Mound site.

Section 3.

This measure is hereby declared to be an emergency measure necessary for the immediate preservation of the public peace, health, safety and welfare and for the further reason that Council desires to adopt this update of the Miamisburg Mound Comprehensive Reuse Plan at the earliest possible date in order to continue redevelopment and funding efforts; therefore, this measure shall take effect and be in force from and after its passage.

Passed: September 2, 2003

Attested:

Judith E. Barney
Judith E. Barney, Clerk of Council

Approved:

Richard C. Church, Jr.
Richard C. Church, Jr., Mayor

I hereby certify that the above is a true and correct copy of Ordinance No. 5733 adopted by the Council of the City of Miamisburg, Ohio, on September 2, 2003






















September 3, 2003.

Date




Judith E. Barney
Judith E. Barney, Clerk of Council

OFFICIAL ZONING MAP
 City of Mantisburg
 Montgomery County, Ohio

ZONING CLASSIFICATIONS

-  R-1 Residential District
-  R-2 Residential District
-  R-3 Residential District
-  R-4 Residential District
-  OR-1 Office-Residential District
-  OS-1 Office-Service District
-  NB-1 Neighborhood Business District
-  GB-1 General Business District
-  CBD-1 Central Business District
-  CSD-1 Central Service District
-  HS-1 Highway Service District
-  RO-1 Research-Office District
-  I-1 Light Industrial District
-  I-2 General Industrial District
-  PR Planned Residential District
-  PO Planned Office District
-  PC Planned Commercial District
-  PI Planned Industrial District
-  A Agricultural District
-  AR Agricultural Residential District
-  FW Flood Hazard District

OVERLAY ZONING DISTRICTS

-  FH Flood Hazard Overlay
-  WF-1 Wetland Protection Overlay
-  AO Austin Overlay

I hereby certify that this Zoning District Map is a composite of the originally approved and the amendments thereafter as reviewed by the Mantisburg City Planning Commission.

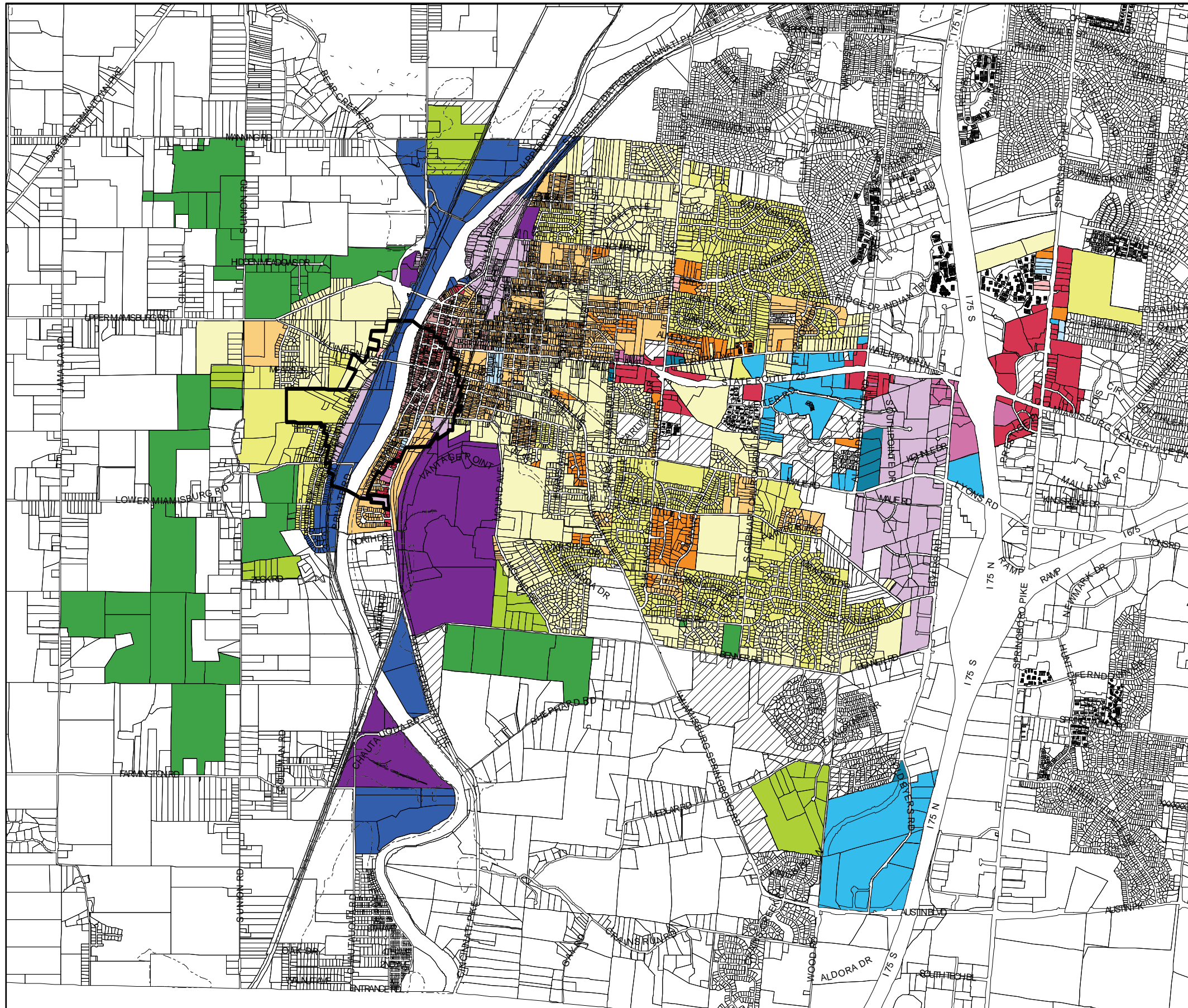
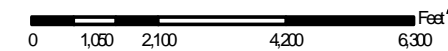
Chairman of Planning Commission _____ Date _____

Secretary _____ Date _____

I hereby certify that this map contains the zoning districts referred to in the Mantisburg Zoning Ordinance No. 2712 and that it also contains the amendments thereto.

Mayor _____ Date _____

Clerk of Council _____ Date _____



ORDINANCE NO. 6393

AN ORDINANCE AUTHORIZING THE CITY MANAGER TO ENTER INTO A PROPERTY TRANSFER AGREEMENT BETWEEN THE CITY OF MIAMISBURG AND THE MOUND DEVELOPMENT CORPORATION, AND DECLARING AN EMERGENCY.

WHEREAS, the City of Miamisburg and Mound Development Corporation (MDC) have worked together to transform the Mound Advanced Technology Center from a former US Department of Energy (DOE) research and development center (Mound) into a modern technology focused business park; and

WHEREAS, the City of Miamisburg facilitated the creation of the Mound Development Corporation (formerly the Miamisburg Mound Community Improvement Corporation), as the organization to lead the redevelopment of Mound; and

WHEREAS, the redevelopment of the Mound site is ongoing; and

WHEREAS, the ownership of portions of the Mound site have been transferred from DOE to MDC and future ownership transfers are expected; and

WHEREAS, the City of Miamisburg and MDC wish to maximize the development opportunities associated with this property by having the City hold ownership of the property until it is ready for development; and

WHEREAS, the parties wish to enter into an agreement that will clearly define the roles and responsibilities of each party as it relates to the ownership and future transfer of ownership of property at Mound.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF MIAMISBURG, STATE OF OHIO, TWO-THIRDS OF THE ELECTED MEMBERS THERETO CONCURRING, THAT:

Section 1.

The City Manager of the City of Miamisburg is hereby authorized to enter into the Transfer Agreement, which is attached hereto as Exhibit A, on behalf of the City by any one or more members of City Council and the City Manager, with any changes therein as are permitted by applicable law and not adverse to the City, and the fact that any such changes are permitted by applicable law and not adverse to the City shall be evidenced by the execution of the Amendment by those officers.

Section 2.

This measure is hereby declared to be an emergency measure necessary for the immediate preservation of the public peace, health, safety and welfare and for the further reason that this agreement is necessary to allow for the expedition transfer of property when needed to further the economic development goals of the Mound redevelopment efforts; therefore, this measure shall take effect and be in force from and after its passage.

Passed: April 16, 2013 Attested Judith E. Barney
Judith E. Barney, Clerk of Council

Approved: Richard C. Church, Jr.
Richard C. Church, Jr., Mayor

TRANSFER AGREEMENT

This Transfer Agreement ("Agreement") is entered into between Mound Development Corporation, an Ohio non-profit corporation ("MDC"), and the City of Miamisburg, a Ohio municipal corporation ("City"), effective this _____ day of _____, 20____.

WHEREAS, the City contains a former Department of Energy ("DOE") Research and Development Center known as The Mound; and

WHEREAS, MDC was formerly known as the Miamisburg Mound Community Improvement Corporation and was chosen by the City as the vehicle for working with the DOE to redevelop The Mound as a private development center to create jobs and business opportunities for the City and its residents; and

WHEREAS, the redevelopment of The Mound is ongoing; and

WHEREAS, certain portions of The Mound need to be transferred from the DOE to MDC, or have been transferred already, but are not yet ready for development by MDC; and

WHEREAS, the City and MDC wish to cooperate to maximize the development opportunities associated with this property by having the City hold ownership of the property until it is ready for development:

NOW, THEREFORE, the parties agree, for One Dollar (\$1.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, as follows:

1. MDC may, upon written request to the City Manager, transfer any or all of the property identified on Exhibit A from time to time to be held by the City for future use.

2. The City agrees, upon written request by MDC, to retransfer all or portions of the property previously transferred pursuant to Paragraph 1 from time to time from the City back to MDC. The transfers shall be completed as soon as requested by MDC if possible, or as soon as

reasonably possible in any event. Likewise, MDC agrees, upon written request by the City, to accept the previously transferred of property back from the City shall the City unilaterally determine that it desires to transfer such property back to MDC.

3. Such transfers shall be done at the sole cost of MDC, and the City shall bear no cost involved in any of the property transfers anticipated by this Agreement.

4. MDC agrees that it will reimburse the City the cost of liability insurance and any other insurance coverage the City or MDC deem to be necessary to protect the City or MDC during such time as the City holds the property, at MDC's sole cost. MDC shall reimburse the City within twenty (20) days after receiving an invoice from the City for such costs.

5. MDC will provide maintenance on the property as reasonably required to maintain the property in a legal fashion and will do so in a way deemed reasonable by the City. This maintenance will be provided entirely at MDC's cost. At the City's request, MDC will enter into an agreement regarding the details of this maintenance responsibility. This agreement will be reasonably satisfactory to the City. The City and MDC will each have the right to access the property as necessary for their own interests but the City agrees to adopt rules as needed to prohibit the use of the property by the public generally.

6. MDC will be responsible for any and all costs related to transfers of the property, including, as needed, surveys, title searches, legal documents, and transfer costs.

7. MDC shall be responsible for any and all property taxes owed on the transferred property in the event that it is determined that such property is not tax exempt at any time subsequent to its transfer to the City.

8. Either party may terminate this Agreement with One Hundred Eighty (180) days' written notice to the other party, at which time any property then owned by the City will be

transferred back to MDC. The Agreement shall continue in full force and effect unless terminated by either party.

9. This Agreement shall be binding upon the successors and assigns of each party. The laws of the State of Ohio will be used to interpret this Agreement. If a court of competent jurisdiction shall strike down a part of this Agreement, the parties shall interpret the remaining parts of the Agreement as possible to accomplish the original intent of the Agreement.

IN WITNESS WHEREOF, the parties hereto have agreed as stated above.

MOUND DEVELOPMENT CORPORATION

By: _____
Michael Grauwelman
Its: President

CITY OF MIAMISBURG, OHIO

By: _____
Keith D. Johnson
Its: City Manager

Appendix C

Records, Freedom of Information Act (FOIA), and Privacy Act (PA) Information

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How to Access General Site and Information Repository (IR) Documents

1. General Site Documents

General site documents, including plans, institutional control (IC) assessments, and monitoring reports are available on the U.S. Department of Energy (DOE) Office of Legacy Management (LM) public website at <http://www.lm.doe.gov/mound/Sites.aspx> on the **Site Documents and Links** webpage. Key documents are listed at the top of the page and other documents are sorted into the following general categories:

- **Fact Sheet**
- **Community Involvement**
- **General Site Documents**
- **Reports**
- **Other Site Documents**

2. Information Repository Documents

IR records relating to the site remediation, including the subset of Administrative Record (AR) files, are available in several places on the LM public website.

- **Linked Indexes**

The Mound collection of documents relating to the site remediation is available in linked indexes on the Mound Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) page (http://www.lm.doe.gov/CERCLA_Home.aspx). The indexes are in PDF format that include the document number, title, date, and size for each document along with a clickable link to the document.

- **AR/IR Linked Index:** This is a list of all Mound documents in the CERCLA database, including drafts. The items are sorted by date in this list.
- **Key Document Linked Indexes:** Primary CERCLA documents are shown in a separate list for each of the following categories:
 - [General Site](#)
 - [Operable Units](#)
 - [Parcels](#)
 - [Buildings](#)
 - [Potential Release Sites \(PRSs\)](#)
 - [Offsite](#)

- CERCLA Database Search

To directly access the DOE CERCLA database to search for Mound documents, do the following:

- [1] Go to http://www.lm.doe.gov/CERCLA_Home.aspx.
- [2] On the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** webpage, click **Search CERCLA Collections**.
- [3] On the webpage that appears, select Mound, Ohio, Site from the dropdown list and then click **Search the AR**.
- [4] In the search page that appears, you can search for documents by document number, document date, title, keywords, and/or other fields. For the best results, use only a few words in one field (most typically the title box). Data can be sorted by date or document number. Leave all boxes blank to see all documents.

3. Google Search Tool on LM Website

Both general site records and IR records can be found using the Google search tool at the top right of the LM webpage at <http://www.lm.doe.gov/>. This will search all the documents available on the LM public website, including the Mound site documents and IR documents. Click on the Search icon with the field empty to access the advanced search capability.

4. Internet Search Tools

Other commercial internet search tools such as Google or Bing will also find the Mound CERCLA and important site documents that are available on the LM Mound site webpages.

5. Information for former Mound contractor employees

- Former Mound Employee Contact Information

Contact telephone numbers and websites for former Mound prime contract employees are located on the webpage <http://www.lm.doe.gov/Mound/Benefits.aspx>.

- Mound Former Employee Verification of Employment

Former Mound prime contract employee verification can be obtained by calling the Mound Benefits Center managed by Mercer at (866) 296-5036. Additional personnel file information requires a privacy act request as described in the following section.

How to Request Freedom of Information Act (FOIA) or Privacy Act (PA) Records

FOIA Requests

The FOIA Request provides access to non-employee records, including Mound site records. FOIA requests can be initiated either electronically or in writing by U.S. mail. If you have any questions, call (202) 586-5955.

How to Submit a FOIA Request

- Electronically: FOIA requests can be completed electronically at the following website:<http://energy.gov/doe-headquarters-foia-request-form>.
- By mail: FOIA requests can be submitted by mail to the following address:

FOIA Requester Service Center
1000 Independence Avenue, SW
Mail Stop MA-90
Washington, DC 20585

- **By fax:** Send to (202) 586-0575.

Privacy Act (PA) Requests

A PA request is required to obtain access to your personnel records, including medical, human resources, employment verification, dosimetry, and training records. For privacy reasons, PA requests cannot be submitted electronically. They must be submitted in writing by U.S. mail, by fax, or in person.

How to Submit a Privacy Act Request

- To write the request, do one of the following:
 - Use the DOE *Privacy Act Information Request* form (DOE F 531), located at <http://energy.gov/cio/downloads/doe-f-531>
 - Write a letter of request with details shown in the following section

To submit the written request, do one of the following:

- Mail the PA request form or letter to:

The U. S. Department of Energy
Privacy Act Request Office
Room GB-172/FORS
1000 Independence Avenue, S.W.
Washington, D.C. 20585

- Fax the form or letter to the Privacy Act Request Office at (202) 586-8151



Email requests are not accepted.

Note

A Privacy Act form or letter of request must contain the following:

- Name, address, date of birth, social security number, employee identification number (if any), and signature
- The type of record requested
- A brief description of the nature, time, place, and circumstances of your association with DOE
- Any other information which you believe would help DOE to determine whether the information about you is included in the system of records
- If you are authorizing another individual to have access to your records, the name of that person; and
 - Two (2) forms of identification; One ID must have your picture, current address and signature (such as a copy of your driver license, federal agency badge, or passport). The other ID must have your name, address and signature.
 - Certification of identity.

What is a Privacy Act certification of identity?

When you request access to records about yourself, you must verify your identity. You must sign your request, and your signature must either be notarized or submitted by you under 28 USC 1746, a law that permits statements to be made under penalty of perjury as a substitute for notarization.

The following information is required:

- Your full name;
- An acknowledgement that you understand the criminal penalty in the Privacy Act for requesting or obtaining access to records under false pretenses (5 USC 552a(I)(3)); and
- A declaration that your statement is true and correct under penalty of perjury (18 USC 1001).

Go to the U.S. DOE Privacy Web site for any recent updates:

<http://energy.gov/cio/office-chief-information-officer/services/guidance/privacy>

Appendix D

Mound Site Groundwater Monitoring Wells

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*Mound Site Groundwater Monitoring Wells and
Ohio Department of Natural Resources (ODNR) Identification Numbers*

DOE Well ID	Remedy Area	Coordinates ^a		Installation Date	ODNR Number
		Northing	Easting		
0118	Parcel 6, 7, and 8	600465.0	1464737.8	10/19/87	679212
0124	Parcel 6, 7, and 8	597789.1	1463654.1	10/12/87	679202
0126	Parcel 6, 7, and 8	597603.6	1463643.3	10/15/87	679214
0138	Parcel 6, 7, and 8	600124.0	1464263.3	10/27/87	679207
0301	Parcel 6, 7, and 8	598315.0	1463120.4	08/05/89	707690
0305	Operable Unit 1	596938.7	1464025.4	08/21/89	707676
0311	Parcel 6, 7, and 8	598316.3	1463129.3	08/03/89	707686
0315	Parcel 6, 7, and 8	597786.3	1464020.4	08/06/89	707680
0346	Parcel 6, 7, and 8	598070.1	1465048.9	04/02/93	In progress
0347	Parcel 6, 7, and 8	597819.3	1464034.1	02/17/93	In progress
0353	Phase I	596686.1	1464609.4	02/08/93	798513
0379	Parcel 6, 7, and 8	597624.4	1464095.9	12/04/92	In progress
0386	Parcel 6, 7, and 8	597789.2	1463896.0	03/22/93	In progress
0387	Parcel 6, 7, and 8	597654.6	1463839.5	03/30/93	In progress
0389	Parcel 6, 7, and 8	597781.3	1463891.9	03/24/93	707678
0392	Parcel 6, 7, and 8	597648.8	1463838.3	03/31/93	In progress
0400	Phase I	596122.8	1464333.1	06/28/94	798511
0402	Phase I	596407.8	1464208.0	06/30/94	795001
0411	Phase I	596808.8	1465077.1	06/20/94	795002
0416	Operable Unit 1	596952.5	1463907.2	06/18/96	833665
0417	Operable Unit 1	596967.1	1463965.9	06/12/96	833666
0418	Operable Unit 1	596898.5	1464025.9	06/13/96	833672
0419	Operable Unit 1	596936.4	1464162.2	06/19/96	833664
0422	Operable Unit 1	597256.04	1463923.5	03/20/97	In progress
0423	Operable Unit 1	597116.0	1463910.6	03/14/97	In progress
0424	Operable Unit 1	596878.4	1463925.8	03/13/97	In progress
0425	Operable Unit 1	596871.4	1463926.6	03/17/97	In progress
0443	Phase I	596886.2	1465177.1	04/10/02	In progress
0444	Phase I	596463.4	1465001.6	04/11/02	In progress
0445	Phase I	596448.1	1464738.5	04/06/02	In progress
0449	Operable Unit 1	596947.9	1463970.1	07/10/07	In progress
0450	Operable Unit 1	596944.3	1464034.9	07/11/07	In progress
0451	Operable Unit 1	596714.9	1464186.5	11/09/11	2035333
0452	Operable Unit 1	596668.4	1464104.3	04/01/13	2044036
P015	Operable Unit 1	596795.9	1464213.2	10/26/92	In progress
P027	Operable Unit 1	596693.8	1464019.5	01/09/93	In progress
P031	Operable Unit 1	596467.9	1464060.3	01/09/93	In progress
P033	Phase I	596208.2	1464233.8	01/11/93	In progress
P052	Operable Unit 1	596933.0	1464075.8	03/25/99	In progress

*Mound Site Groundwater Monitoring Wells and
Ohio Department of Natural Resources (ODNR) Identification Numbers*

DOE Well ID	Remedy Area	Coordinates ^a		Installation Date	ODNR Number
		Northing	Easting		
P053	Operable Unit 1	597195.6	1463999.6	02/26/09	2021524
P055	Operable Unit 1	597094.9	1464098.5	02/24/09	2021527
P056	Operable Unit 1	597009.6	1463996.1	02/26/09	2021528
P027	Operable Unit 1	596789.0	1464063.7	03/25/13	2043976
P058	Operable Unit 1	596822.7	1464179.0	03/27/13	2043977
P059	Operable Unit 1	596727.6	1464093.2	04/04/13	2043978
P060	Operable Unit 1	596626.3	1464140.1	04/05/13	2044020
P061	Operable Unit 1	596519.9	1464325.0	05/19/14	2049177
P062	Operable Unit 1	596438.4	1464399.4	05/20/14	2049178
P063	Operable Unit 1	596417.5	1464305.2	05/22/14	2049179
N-01	Operable Unit 1	597323.1	1463928.1	06/17/14	2049744
N-02	Operable Unit 1	597210.0	1463966.9	06/18/14	2049745
N-03	Operable Unit 1	597214.0	1464006.0	06/18/14	2049746
N-04	Operable Unit 1	597071.0	1463948.9	06/19/14	2049748
N-05	Operable Unit 1	597079.9	1463982.0	06/30/14	2049749
N-06	Operable Unit 1	596999.7	1463967.7	06/30/14	2049750
E-01	Operable Unit 1	597098.1	1464025.0	07/23/14	2049644
E-02	Operable Unit 1	597016.0	1464020.1	07/23/14	2049645
E-03	Operable Unit 1	597039.0	1464062.0	07/28/14	2049646
E-04	Operable Unit 1	596948.4	1464145.2	07/24/14	2049647
E-05	Operable Unit 1	596983.0	1464157.0	07/24/14	2049648
E-06	Operable Unit 1	596949.0	1464200.9	07/28/14	2049649
E-07	Operable Unit 1	596719.0	1464114.0	07/29/14	2049651
E-08	Operable Unit 1	596685.0	1464124.0	07/30/14	2049652
E-09	Operable Unit 1	596651.0	1464132.0	07/31/14	2049657
E-10	Operable Unit 1	596655.9	1464198.0	08/12/14	2049658
E-11	Operable Unit 1	596650.0	1464244.9	08/11/14	2049659
E-12	Operable Unit 1	596620.0	1464133.0	08/04/14	2049660
E-13	Operable Unit 1	596578.0	1464092.9	08/05/14	2049661
E-14	Operable Unit 1	596557.0	1464132.0	08/07/14	2049662
E-15	Operable Unit 1	596585.3	1464150.9	08/07/14	2049663
E-16	Operable Unit 1	596611.9	1464210.0	08/13/14	2049664
E-17	Operable Unit 1	596531.0	1464253.0	08/12/14	2049665
E-18	Operable Unit 1	596549.0	1464287.0	08/11/14	2049667
E-19	Operable Unit 1	596564.0	1464328.0	08/11/14	2049668

^a Note: Coordinate System Datum – NAD83 horizontal and NAD88 vertical