1.0 Site Background

Abbreviated Timeline

1951	Construction of the Feed Materials Production Center began.
1952	Uranium production started.
1986	EPA and DOE signed the Federal Facilities Compliance Agreement, thus initiating the remedial investigation/feasibility study process.
1989	Uranium production was suspended. The Fernald site was placed on the National Priorities List, which is the list of CERCLA sites most in need of cleanup.
1990	As part of the Amended Consent Agreement, the site was divided into operable units for characterization and remedy determination.
1991	Uranium production formally ended. The site mission changed from uranium production to environmental remediation and site restoration.
1994	Decontamination and dismantling of the first building was completed under the Operable Unit 3 Interim Record of Decision.
1996	The last operable unit's Record of Decision was signed, signifying the end of the 10-year remedial investigation/feasibility study process. (The Operable Unit 4 Record of Decision was later re-opened.) Construction began in support of the Operable Unit 1 selected remedy. Soil remedial excavation began as part of the Operable Unit 5 selected remedy.
1997	Construction of Cell 1 of the on-site disposal facility took place, and the first waste placement began in December. Environmental monitoring and reporting were consolidated under the IEMP to align with remediation efforts.
1998	Operable Unit 2 remedial excavations began.
1999	Excavation of the waste pits was initiated under the Operable Unit 1 Record of Decision, and the first rail shipment of waste material was transported to Envirocare of Utah, Inc.
2000	The Record of Decision Amendment for Operable Unit 4 Silos 1 and 2 Remedial Actions was signed by EPA, thus establishing a new selected remedy for Operable Unit 4.
2001	Cell 1 of the on-site disposal facility was capped. Remediation of the southern waste units was completed.
2002	The Silos 1 and 2 Radon Control System began operations and successfully reduced radon levels within the silos. The off-site transfer of nuclear product material was completed. Wastes were placed into cells 2 through 5 of the on-site disposal facility.
2003	All major Operable Unit 2 remedial actions were completed. In addition, approximately 412,000 cubic yards (315,015 cubic meters) of waste were placed in cells 3 through 6 of the on-site disposal facility.
2004	Removal of Silos 1 and 2 wastes from the silos to the holding tank facility was initiated. Plans to reduce the size of the site's wastewater treatment infrastructure were approved and implemented. The last of Fernald's 10 uranium production complexes, plus an additional 35 structures and 73 trailers, were demolished. Also, all eight cells of the on-site disposal facility were capped or received waste, and approximately 513,000 cubic yards (392,240 cubic meters) were placed in cells 4 through 8.
2005	Removal of Silo 3 waste was initiated, and the first shipment of waste arrived at Envirocare of Utah. Remedial actions for Operable Unit 1 were completed in June. The first shipment of Silos 1 and 2 wastes arrived at Waste Control Specialists in Texas.
2006	Remediation of the Fernald site was completed on October 29, 2006, and the site was officially transferred into DOE's Office of Legacy Management on November 17, 2006.
2008	The old Silos Warehouse was remodeled into the new Fernald Preserve Visitors Center and opened to the public in August 2008. In addition, the community was allowed unescorted access to the Fernald Preserve.

In 1951, the U.S. Atomic Energy Commission, predecessor agency to the U.S. Department of Energy (DOE), began building the Feed Materials Production Center on a 1,050-acre (425-hectare) tract of land outside the small farming community of Fernald, Ohio. The facility's mission was to produce "feed materials" in the form of purified uranium compounds and metal for use by other government facilities involved in the production of nuclear weapons for the nation's defense.

Uranium metal was produced at the Feed Materials Production Center from 1952 through 1989. During that time, more than 500 million pounds (lb) (227 million kilograms [kg]) of uranium metal products were delivered to other sites. These production operations caused releases to the surrounding environment, which resulted in contamination of soil, surface water, sediment, and groundwater on and around the site.

In 1991, the mission of the site officially changed from uranium production to environmental cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA [also known as the Superfund]), as amended. The site was renamed the Fernald Environmental Management Project in 1991. In 2003, the site name changed to the Fernald Closure Project to reflect the mission of the site as on a path to closure. In 2007, the site name changed to the "Fernald Preserve" to reflect the completion of the cleanup (with the exception of groundwater), the successful transition to legacy management in late 2006, and the new mission to be an asset to the community as an undeveloped park with an emphasis on wildlife.

S.M. Stoller Corporation, the DOE Office of Legacy Management's (LM) Legacy Management Support contractor, continues to be responsible for site activities, including the ongoing groundwater remedy. Regulatory oversight is provided by the U.S. Environmental Protection Agency (EPA) Region 5 and the Southwest District Office of the Ohio Environmental Protection Agency (OEPA).

In the 1980s, the goals of environmental monitoring activities were to assess the impact of production operations and monitor the environmental pathways through which residents of the local community might be exposed to contaminants from the site (exposure pathways). The environmental monitoring program provided comprehensive on- and off-property surveillance of contaminant levels in surface water, groundwater, air, and biota (produce). The goal was to measure the levels of contaminants associated with uranium production operations and report this information to the regulatory agencies and stakeholders.

Exposure Pathways

An **exposure pathway** is a route that materials can travel between the point of release (a source) and the point of delivering a radiation or chemical dose (a receptor). At the Fernald Preserve, two primary exposure pathways (water and air) have been identified. A primary pathway is one that may allow pollutants to directly reach the public or the environment. Therefore, the water and air pathways provide a basis for environmental sampling and information useful for evaluating potential dose to the public or the environment.

Secondary exposure pathways have been thoroughly evaluated under previous environmental monitoring programs. Secondary exposure pathways represent indirect routes by which pollutants may reach receptors. An example of a secondary pathway is produce. Through the food chain, one organism may accumulate a contaminant and then be consumed by humans or other animals. The contaminant travels through the air to the soil, where it is absorbed into produce through the roots and is consumed by humans or animals. An evaluation of past monitoring data has shown that secondary exposure pathways at the Fernald Preserve are insignificant routes of exposure to off-site receptors. Therefore, the main focus of the IEMP monitoring program is on the primary exposure pathways.

Refer to Chapter 6 of this report for information pertaining to 2008 dose calculations from all pathways.

After the conclusion of the site's uranium production and the completion of the CERCLA remedy selection process, the focus was on the safe and efficient implementation of environmental remediation activities and facility decontamination and dismantling operations. In recognition of this shift in emphasis toward remedy implementation, the environmental monitoring program was revised in 1997 to align with the remediation activities planned for the Fernald site. The site's environmental monitoring program for 2008 is described in the "Integrated Environmental Monitoring Plan" (IEMP), which is Attachment D of the *Comprehensive Legacy Management and Institutional Controls Plan* (LMICP) (DOE 2008a). Now that remediation is complete, the emphasis has shifted again to ensure the continued protectiveness of the completed remedial actions as well as implementation of the ongoing groundwater remedy and performance of the on-site disposal facility (OSDF).

This *Fernald Preserve 2008 Site Environmental Report* summarizes the findings from the IEMP monitoring program and provides a status on the progress toward final site restoration. This report consists of the following:

Summary Report. The summary report (Chapters 1 through 7) documents the results of environmental monitoring activities at the Fernald Preserve in 2008. It includes a discussion of ongoing groundwater remediation activities and summaries of environmental data from groundwater, surface water and treated effluent, sediment, air, and natural resources monitoring programs. It also summarizes the information contained in the appendixes.

Appendixes. The detailed appendixes provide the 2008 environmental monitoring data for the various media, primarily in the form of graphs and tables. The National Emissions Standards for Hazardous Air Pollutants (NESHAP) (Title 40 *Code of Federal Regulations* [CFR] Part 61, Subpart H) compliance report is also included. The appendixes are generally distributed only to the regulatory agencies. However, a complete copy of the appendixes is available at the Public Environmental Information Center, located at 10995 Hamilton-Cleves Highway (Delta Building) in Harrison, Ohio, and is open Monday through Thursday, 9:00 a.m. to 4:00 p.m.

CERCLA Remedial Process

The process of cleaning up sites under CERCLA consists of the following general phases:

Site Characterization—During this phase, contaminants are identified and quantified, and the potential impacts of those contaminants on human health are determined. This phase includes the remedial investigation and the baseline risk assessment.

Remedy Selection—During this phase, cleanup alternatives are developed and evaluated. Activities include the feasibility study and proposed remedial action plan. After public comments are received, a remedy is selected and documented in a Record of Decision.

Remedial Design and Remedial Action—This phase of the CERCLA process includes the detailed design and implementation of the remedy. The CERCLA process ends with certification and site closure.

A 5-year review process is triggered by the onset of construction for the first operable unit remedial action that will result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure. Of all the operable units, the site preparation construction to support the Waste Pits Project under the *Operable Unit 1 Record of Decision* (DOE 1995b) was the first such action. This construction began on April 1, 1996. Two 5-year reviews have been conducted and approved by the regulatory agencies to date (April 2001 and April 2006). These reviews ensure that the remedy remains effective and continues to be protective of human health and the environment. The next scheduled 5-year review is in early 2011.

Site closure, relative to the completion of remediation, was defined in the contract between Fluor Fernald, Inc. and DOE as the physical completion of the scope of work required by the five Records of Decision with the exception of the groundwater remedy and final disposal of the Silos 1 and 2 stabilized material.

LM assumed the long-term surveillance monitoring and maintenance of the Fernald site on November 17, 2006, in order to ensure continued protection of human health and the environment and continued operation of the groundwater remedy. The *Comprehensive Legacy Management and Institutional Controls Plan* (DOE 2008a) defines the activities to be conducted with respect to long-term stewardship at the Fernald Preserve. The CERCLA 5-year review process will continue to provide stakeholders with information on the remedy performance and with long-term stewardship information.

The rest of this introductory chapter provides:

- An overview of the environmental remediation completed as well as ongoing remedy implementation.
- A description of environmental monitoring activities at the Fernald Preserve.
- A description of the physical, ecological, and human characteristics of the area.

1.1 The Path to Site Closure

In 1986, the Fernald site began working through the CERCLA process to characterize the nature and extent of contamination at the site, establish risk-based cleanup standards, and select the appropriate remediation technologies to achieve those standards. To facilitate this process, the site was organized into five operable units in 1991. The purpose of the operable unit concept under CERCLA was to organize site components by their location or by the potential for similar technologies to be used for environmental remediation. The remedy selection process culminated in 1996 with the approval of the final Records of Decision for each of the five operable units. However, several of the Records of Decision (including those for Operable Units 1, 4, and 5) have subsequently been modified through issuance of Explanation of Significant Differences or Record of Decision Amendment documents. These documents were prepared, submitted for EPA and public review, and issued in accordance with CERCLA regulations.

Following approval of the initial Records of Decision, work began on the design and implementation of the operable unit remedies. Table 1−1 describes each operable unit and an overview of its associated remedy.

Table 1–1. Operable Unit Remedies

Operable Unit	Description	Remedy Overview
1	• Waste Pits 1-6 • Clearwell • Burn pit • Berms, liners, caps, and soil within the boundary	Record of Decision approved: March 1995 Explanation of Significant Differences approved: September 2002 Record of Decision Amendment approved: November 2003 Excavation of materials with constituents of concern above final remediation levels (FRLs), waste processing and treatment by thermal drying (as necessary), off-site disposal at a permitted facility, and soil remediation/certification. **Remedial actions completed: June 2005** **Final Remedial Action Report approved: August 2006**
2	• Solid waste landfill • Inactive fly ash pile • Active fly ash pile (now inactive) • North and South Lime Sludge Ponds • Other South Field areas • Berms, liners, and soil within the operable unit boundary	Record of Decision approved: May 1995 Post-Record of Decision Fact Sheet approved: April 1999 Excavation of all materials with constituents of concern above FRLs, treatment for size reduction and moisture control as required, on-site disposal in the OSDF, and off-site disposal of excavated material that exceeded the waste acceptance criteria for the OSDF. **Remedial actions completed: June 2006** **Final Remedial Action Report approved: September 2006**
3	Former production area, associated facilities, and equipment (includes all above- and below-grade improvements), including but not limited to: • All structures, equipment, utilities, effluent lines, and K-65 transfer line • Wastewater treatment facilities • Fire training facilities • Coal pile • Scrap metals piles • Drums, tanks, solid waste, waste product, feedstocks, and thorium	Record of Decision for Interim Remedial Action approved: June 1994 Record of decision for Final remedial Action approved: August 1996 Adoption of Operable Unit 3 Interim Record of Decision; alternatives to disposal through the unrestricted or restricted release of materials as economically feasible for recycling, reuse, or disposal; treatment of material for on- or off-site disposal; required off-site disposal for process residues, product materials, process-related metals, acid brick, concrete from specific locations, and any other material exceeding the OSDF waste acceptance criteria; and on-site disposal for material that meets the OSDF waste acceptance criteria. **Remedial actions completed: October 2006** **Final Remedial Action Report approved: February 2007**
4	• Silos 1 and 2 (containing K-65 residues; demolished in 2005) • Silo 3 (containing cold metal oxides; demolished in 2006) • Silo 4 (empty and never used; demolished in 2003) • Decant tank system • Berms and soil within the operable unit boundary	Record of Decision approved: December 1994 Explanation of Significant Differences for Silo 3 approved: March 1998 Record of Decision Amendment for Silos 1 and 2 approved: July 2000 Record of Decision Amendment for Silo 3 approved: September 2003 Explanation of Significant Differences for Silos 1 and 2 approved: November 2003 Explanation of Significant Differences for Operable Unit 4 approved: January 2005. Removal of Silo 3 materials for treatment and Silos 1 and 2 residues and decant sump tank sludges with on-site stabilization of materials, residues, and sludges followed by off-site disposal. Excavation of silos area soils contaminated above the FRLs with on-site disposal for contaminated soils and debris that meet the OSDF waste acceptance criteria; and site restoration. Concrete from Silos 1 and 2, and contaminated soil and debris that exceeded the OSDF waste acceptance criteria were disposed of off site. **Remedial actions for Silo 3 completed: April 2006** **Remedial actions involving the completion of the shipment of stabilized Silos 1 and 2 material to a temporary storage facility in Texas was completed in May 2006.** **Final Remedial Action Report Approved: September 2006**

Table 1–1 (continued). Operable Unit Remedies

Operable Unit	Description	Remedy Overview
5	• Groundwater • Surface water and sediments • Soil not included in the definitions of Operable Units 1 through 4 • Flora and fauna	Record of Decision approved: January 1996 Explanation of Significant Differences was approved in November 2001, formally adopting EPA's Safe Drinking Water Act maximum contaminant level for uranium of 30 micrograms per liter (µg/L) as both the FRL for groundwater remediation and the monthly average uranium effluent discharge limit to the Great Miami River. Extraction of contaminated groundwater from the Great Miami Aquifer to meet FRLs at all affected areas of the aquifer. Treatment of contaminated groundwater, storm water, and wastewater to attain concentration and mass-based discharge limits and FRLs in the Great Miami River. Excavation of contaminated soil and sediment to meet FRLs. Excavation of contaminated soil containing perched water that presents an unacceptable threat through contaminant migration to the underlying aquifer. On-site disposal of contaminated soil and sediment that meet the OSDF waste acceptance criteria. Soil and sediment that exceeded the waste acceptance criteria for the OSDF was treated, when possible, to meet the OSDF waste acceptance criteria or was disposed of at an off-site facility. Also includes site restoration, institutional controls, and post-remediation maintenance. **Interim Remedial Action Report approved: August 2008**

1.2 Environmental Monitoring Program

In the 1980s, an environmental monitoring program was initiated to assess the impact of past operations on the environment and monitor potential exposure pathways to the local community. Additionally, characterization activities were conducted at the Fernald site for nearly 10 years through the remedial investigation phase of the CERCLA process. The initial environmental evaluations performed during the remedial investigation/feasibility study process were used to select the final remedy for Operable Unit 5, which addressed contamination in soil, groundwater, surface water, sediment, air, and biota—in short, all environmental media and contaminant exposure pathways affected by past uranium production operations at the site. The selected remedy for Operable Unit 5 defined the site's final contaminant cleanup levels and established the extent of on- and off-property remedial actions necessary to provide permanent solutions to environmental concerns posed by the site.

The Operable Unit 5 remedy included plans for removing the contamination that might be released through these exposure pathways and for monitoring these pathways to measure the site's continuing impact on the environment as remediation progresses. The characterization data used to develop the final remedy were also used to focus on and develop the environmental monitoring program documented in the IEMP.

The following describes the IEMP’s key elements:

- The IEMP defines monitoring activities for environmental media, such as groundwater, surface water and treated effluent, sediment, air (including air particulate, radon, and direct radiation), and natural resources. In general, the primary exposure pathways (water and air) are monitored, and the program focuses on assessing the collective effect of sitewide emissions on the surrounding environment.
- The IEMP establishes a data evaluation and decision-making process for each environmental medium. Through this process, environmental conditions at the site are

continually evaluated. These evaluations sometimes affect decisions made about the implementation of remediation activities. For example, environmental data are routinely evaluated to identify any significant trends that may indicate the potential for an unacceptable future impact to the environment if action is not taken.

- Because the type and pace of activities will change over the life of the cleanup effort, the IEMP allows for program adjustments as the mission changes. At this time, the IEMP is reviewed annually and revised as necessary to ensure that the monitoring program adequately addresses changing activities.
- The IEMP consolidates routine reporting of environmental data into this comprehensive annual report.

1.3 Characteristics of the Site and Surrounding Area

The natural settings of the Fernald Preserve and nearby communities were important factors in selecting the final remedy and remain important in the continual evaluation of the environmental monitoring program. Land use and demography, local geography, geology, surface hydrology, meteorology, and natural resources all impact monitoring activities and the implementation of the site remedy.

1.3.1 Land Use and Demography

Economic activities in the area rely heavily on the physical environment. Land in the area is used primarily for livestock, crop farming, and gravel pit excavation operations. There also is a private water utility approximately 2 miles (3.2 kilometers [km]) east of the Fernald Preserve that pumps groundwater primarily for industrial use.

Downtown Cincinnati is approximately 18 miles (29 km) southeast of the Fernald Preserve (Figure 1−1). The cities of Fairfield and Hamilton are 6 and 8 miles (10 and 13 km) to the east and northeast, respectively (Figure 1−2). Scattered residences and several villages, including Fernald, New Baltimore, New Haven, Ross, and Shandon, are located near the site. According to the 2000 U.S. Census Bureau figures, there is an estimated population of 20,000 within 5 miles (8 km) of the Fernald Preserve, and an estimated 2.7 million people live within 50 miles (80 km).

1.3.2 Geography

Figure 1−3 depicts the location of the major physical features of the site, such as the buildings and supporting infrastructure. The former production area and the OSDF dominate this view. The former production area occupies approximately 136 acres (55 hectares) in the center of the site, and the OSDF occupies approximately 120 acres (48.6 hectares). The Great Miami River cuts a terraced valley to the east of the site, and Paddys Run (an intermittent stream) flows from north to south along the site's western boundary. In general, the site lies on a terrace that slopes gently among vegetated bedrock outcrops to the north, southeast, and southwest.

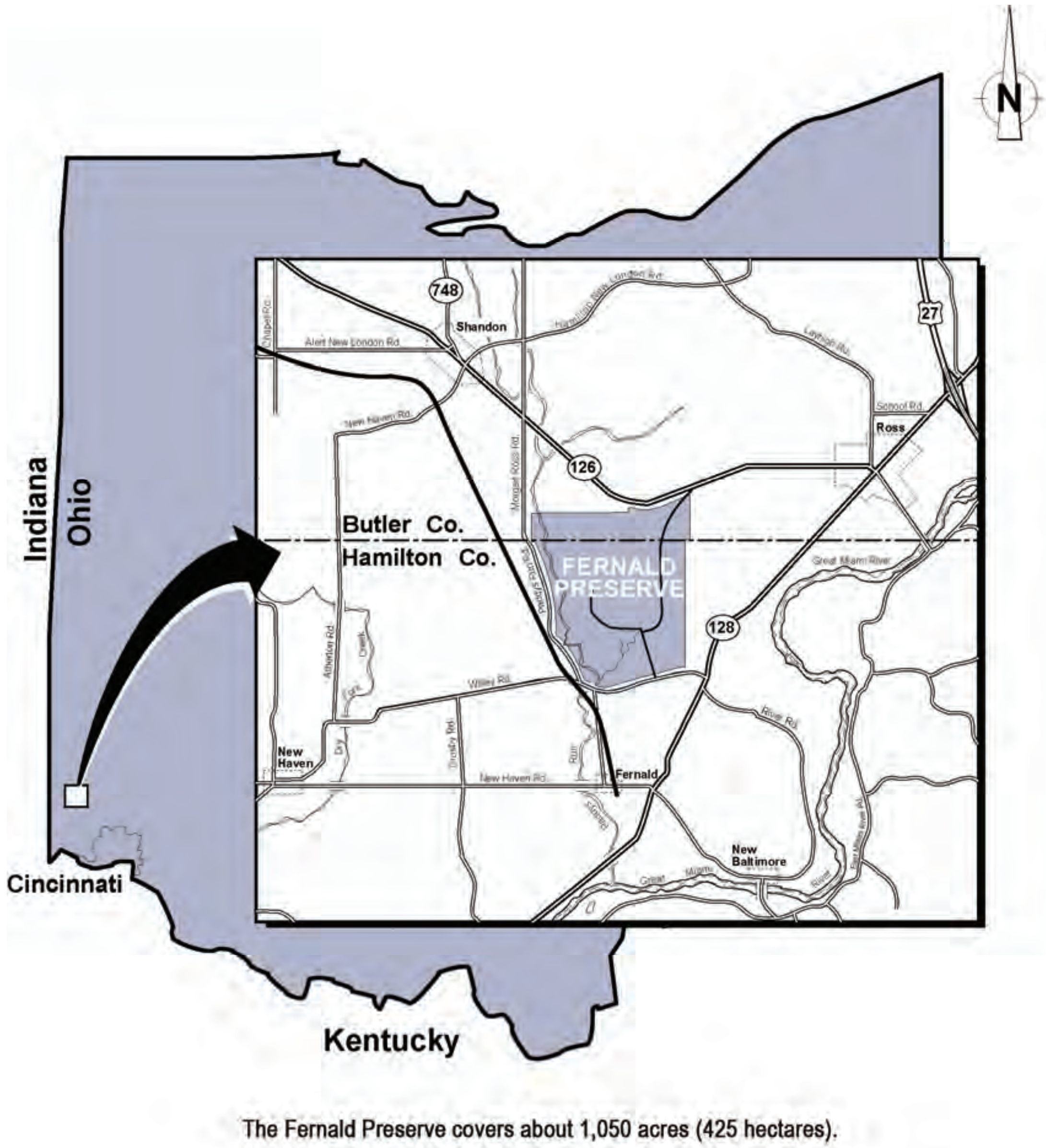

Figure 1–1. Fernald Preserve and Vicinity

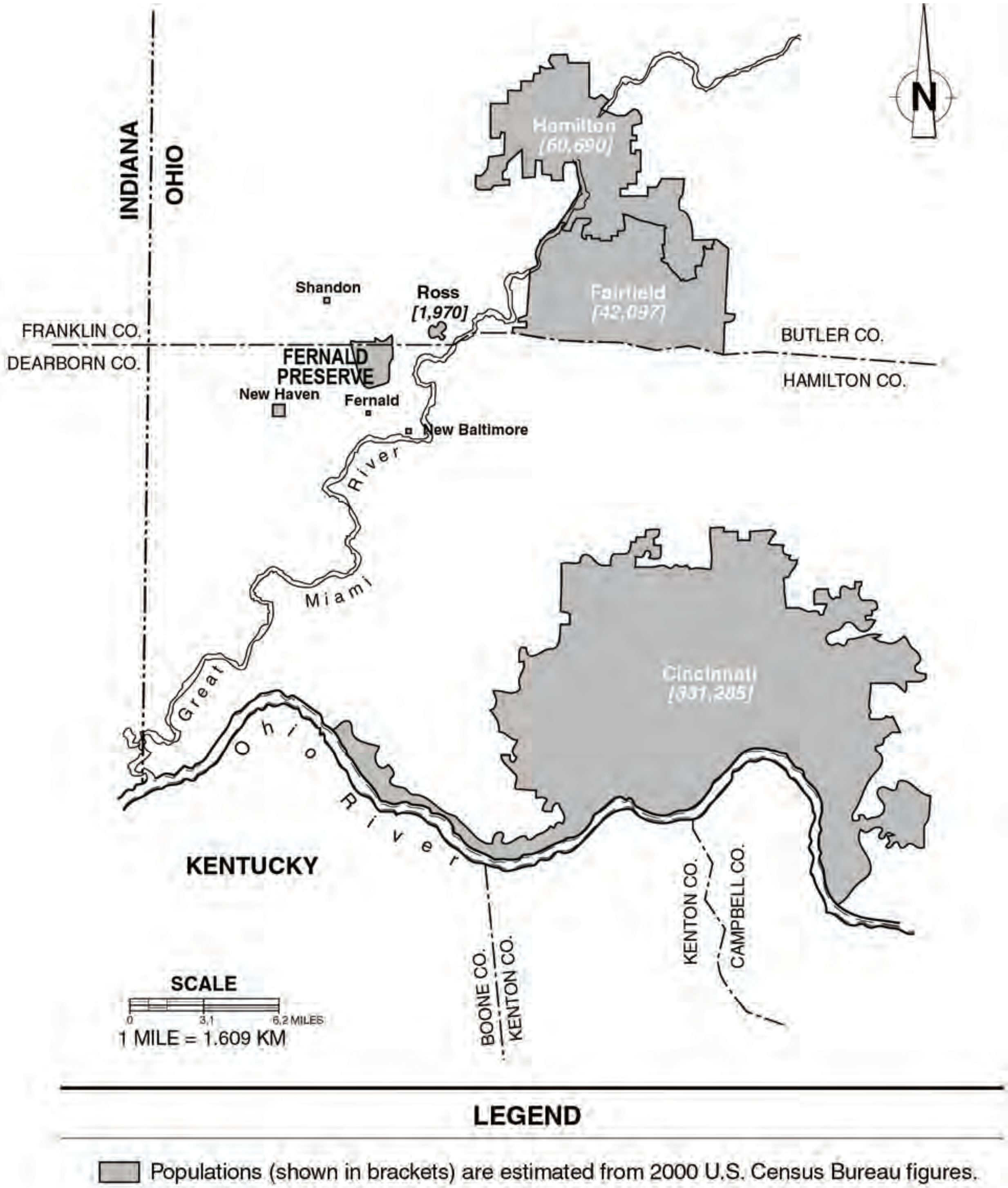

Figure 1–2. Major Communities in Southwestern Ohio

Figure 1–3. Fernald Preserve Perspective

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1.3.3 Geology

Bedrock in the area indicates that approximately 450 million years ago a shallow sea covered the Cincinnati area. Sediments that later became flat-lying shale with interbedded limestone were deposited in the shallow sea, as evidenced by the abundance of marine fossils in the bedrock. In the more recent geologic past, the advance and retreat of three separate glaciers shaped the southwestern Ohio landscape. A large river drainage system south of the glaciers created river valleys up to 200 feet (ft) (61 meters [m]) deep, which were then filled with sand and gravel when the glaciers melted. These filled river valleys are called buried valleys.

The last glacier to reach the area left a glacial overburden—a low-permeability mixture of clay and silt with minor amounts of sand and gravel—deposited across the land surface. The site is situated on a layer of glacial overburden that overlies portions of a 2- to 3-mile-wide (3- to 5-km-wide) buried valley. This valley, known as the New Haven Trough, makes up part of the Great Miami Aquifer. The impermeable shale and limestone bedrock that defines the edges and bottom of the New Haven Trough restricts the groundwater to the sand and gravel within the buried valley. Where present, the glacial overburden limits the downward movement of precipitation and surface water runoff into the underlying sand and gravel of the Great Miami Aquifer.

The Great Miami River and its tributaries have eroded considerable portions of the glacial overburden and exposed the underlying sand and gravel of the Great Miami Aquifer. Thus, in some areas, precipitation and surface water runoff can easily migrate into the underlying Great Miami Aquifer, permitting contaminants to be transported to the aquifer as well. Natural and man-made breaches of the glacial overburden were key pathways where contaminated water entered the aquifer, causing the groundwater plumes that are being addressed by aquifer restoration activities. Figure 1−4 provides a glimpse into the structure of subsurface deposits in the region along an east-west cross section through the site, and Figure 1−5 presents the regional groundwater flow patterns in the Great Miami Aquifer.

1.3.4 Surface Hydrology

The Fernald Preserve is located in the Great Miami River drainage basin (Figure 1−6). Natural drainage from the site to the Great Miami River occurs primarily via Paddys Run. This intermittent stream begins losing flow to the underlying sand and gravel aquifer south of the former waste pit area. Paddys Run empties into the Great Miami River 1.5 miles (2.4 km) south of the site. The Great Miami River, 0.6 mile (1 km) east of the Fernald Preserve, runs in a southerly direction and flows into the Ohio River about 24 miles (39 km) downstream of the site. The segment of the river between the Fernald Preserve and the Ohio River is not used as a source of public drinking water.

The average flow volume for the Great Miami River in 2008 was 6,028 cubic feet per second (170.6 cubic meters per second). This average is based on daily measurements collected at the United States Geologic Survey (USGS) Hamilton stream gauge (USGS 3274000) approximately 10 river miles (16 river km) upstream of the site's effluent discharge.

1.3.5 Meteorology

Meteorological data are used in atmospheric models to evaluate how airborne particulate is mixed and dispersed. The amount of particulate predicted to be present in the atmosphere is used to assess the impact of operations on the surrounding environment, in accordance with DOE requirements. The Fernald Preserve no longer maintains a meteorological station, and 2008 data for temperature, precipitation, and wind velocity were obtained from two available sources. Temperature and precipitation data were obtained from the Butler County Regional Airport. Wind velocity and direction were calculated from the 2002 through 2006 data collected on the site, as these parameters are sensitive to vegetation cover and topography and play a key role in predicting how pollutants are distributed in the surrounding environment at the Fernald Preserve.

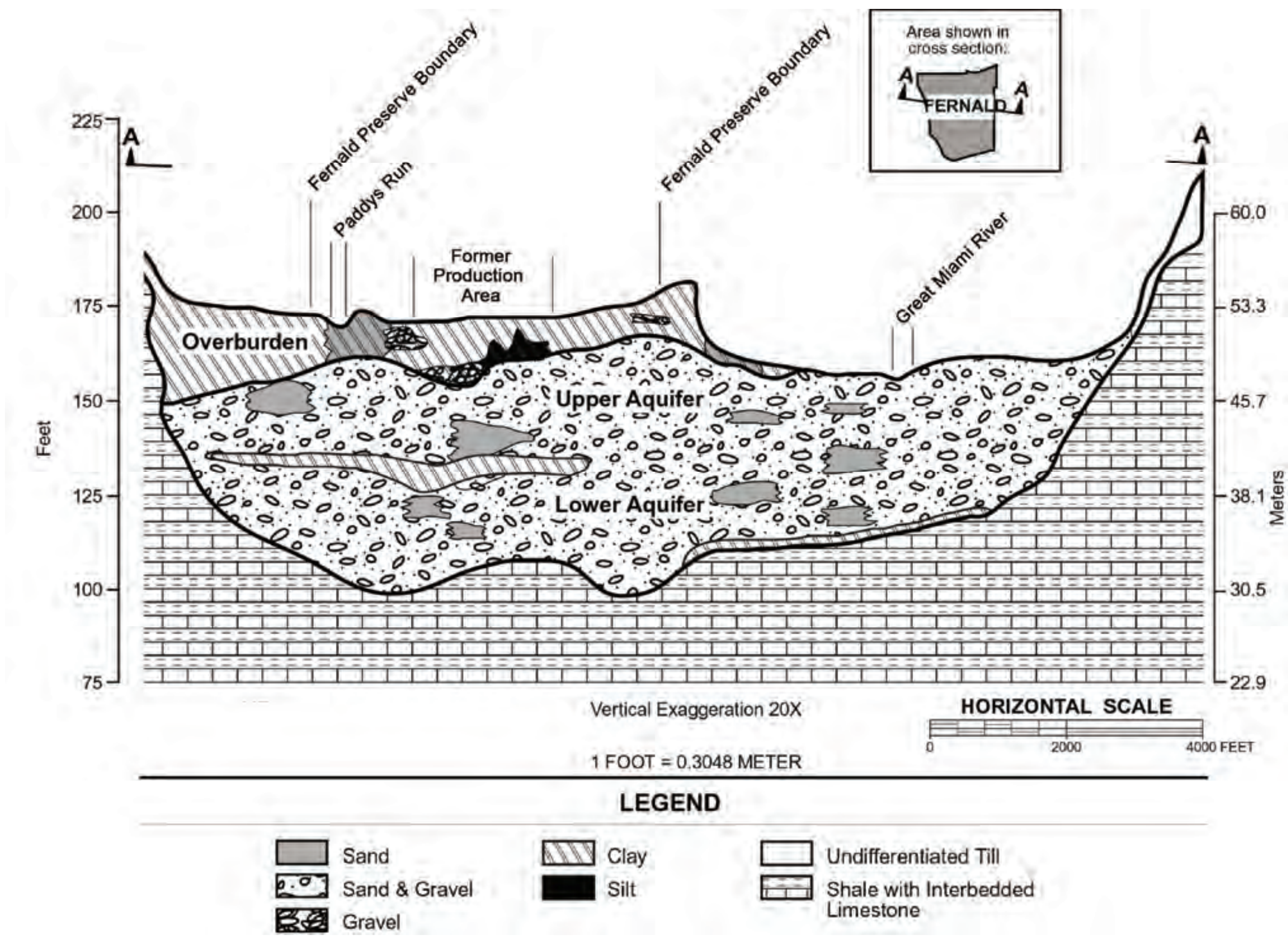

Figure 1–4. Cross Section of the New Haven Trough, Looking North

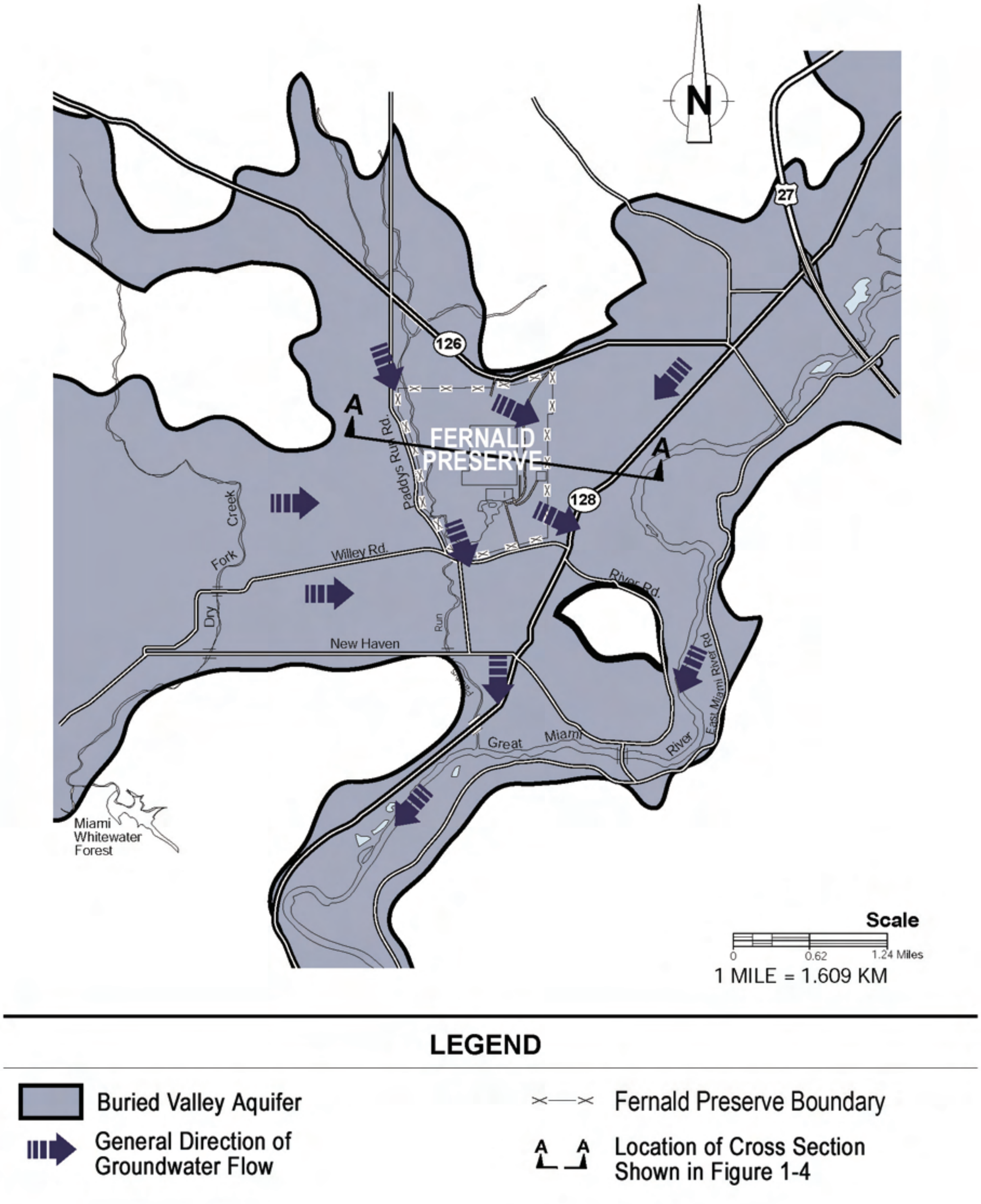

Figure 1–5. Regional Groundwater Flow in the Great Miami Aquifer

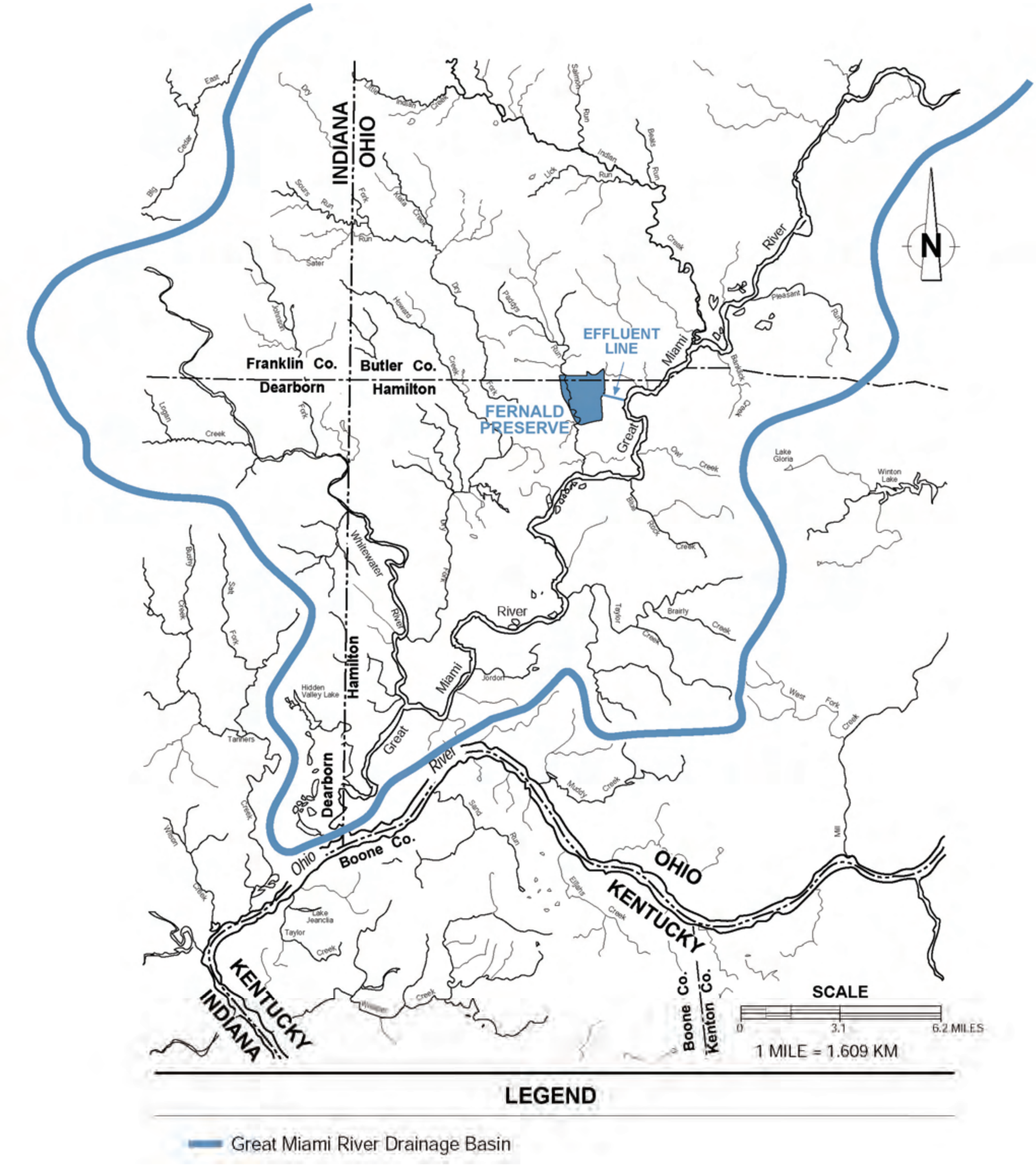

Figure 1–6. Great Miami River Drainage Basin

Figure 1−7 and Figure 1−8 illustrate the average wind speed and general wind direction for 2002 to 2006 measured at the 33-ft (10-m) and 197-ft (60-m) levels, respectively, in wind rose format. The tables in Appendix C, Attachment C.4, present precipitation and temperature data for 2008 and the average wind direction and average speed for 2002 to 2006.

In 2008, 43.68 inches (110.9 centimeters [cm]) of precipitation were measured at the Butler County Regional Airport. This is slightly higher than the average annual precipitation of 41.16 inches (104.55 cm) for 1951 through 2008. Figure 1−9 shows the average precipitation recorded at the Fernald Preserve for each year from 1994 through 2008 and the annual average precipitation for the Cincinnati area from 1951 through 2008. Figure 1−10 shows monthly precipitation at the site for 2008 compared to the Cincinnati area average monthly precipitation from 1951 through 2008.

1.3.6 Natural Resources

Natural resources have important aesthetic, ecological, economic, educational, historical, recreational, and scientific value to the United States. Their protection will be an ongoing process at the Fernald Preserve. Studies such as wildlife surveys (Facemire et al. 1990) and the “Operable Unit 5 Ecological Risk Assessment” (provided as Appendix B of the *Remedial Investigation Report for Operable Unit 5* [DOE 1995d]) show that terrestrial and aquatic flora and fauna at the site are diverse, healthy, and similar in abundance and species composition to those populations of surrounding ecological communities. Chapter 7 provides a discussion of the site's diverse ecological habitats and cultural resources.

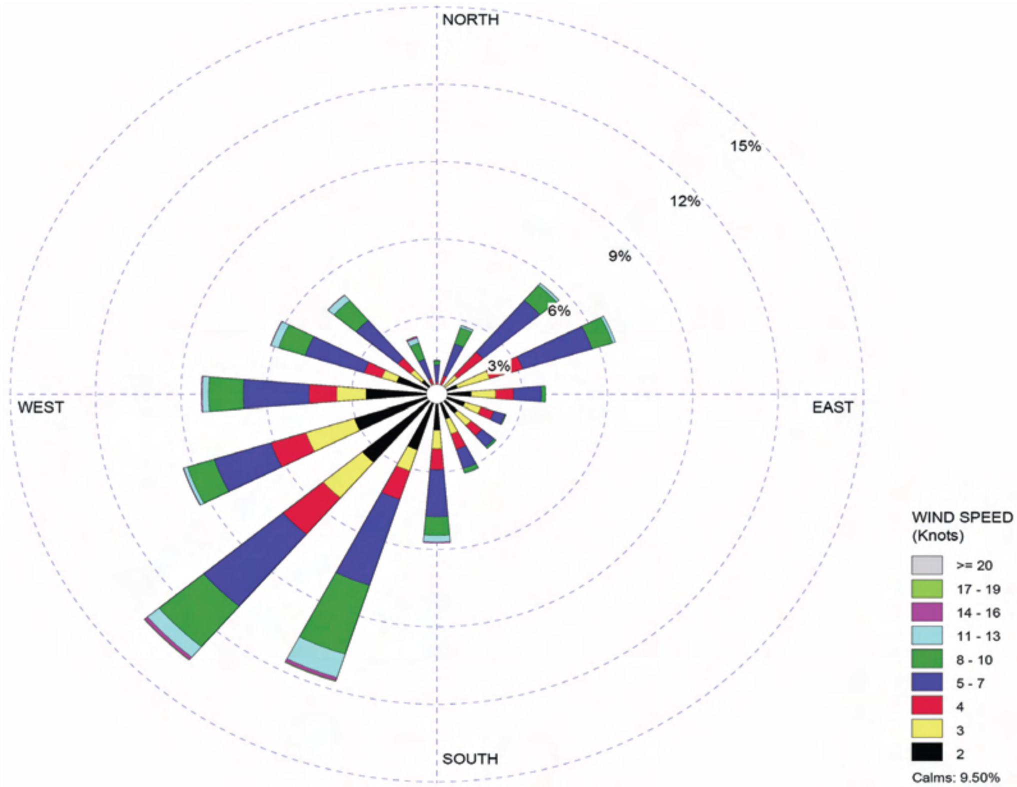

Figure 1–7. 2002–2006 Wind Rose, 33-ft (10-m) Height

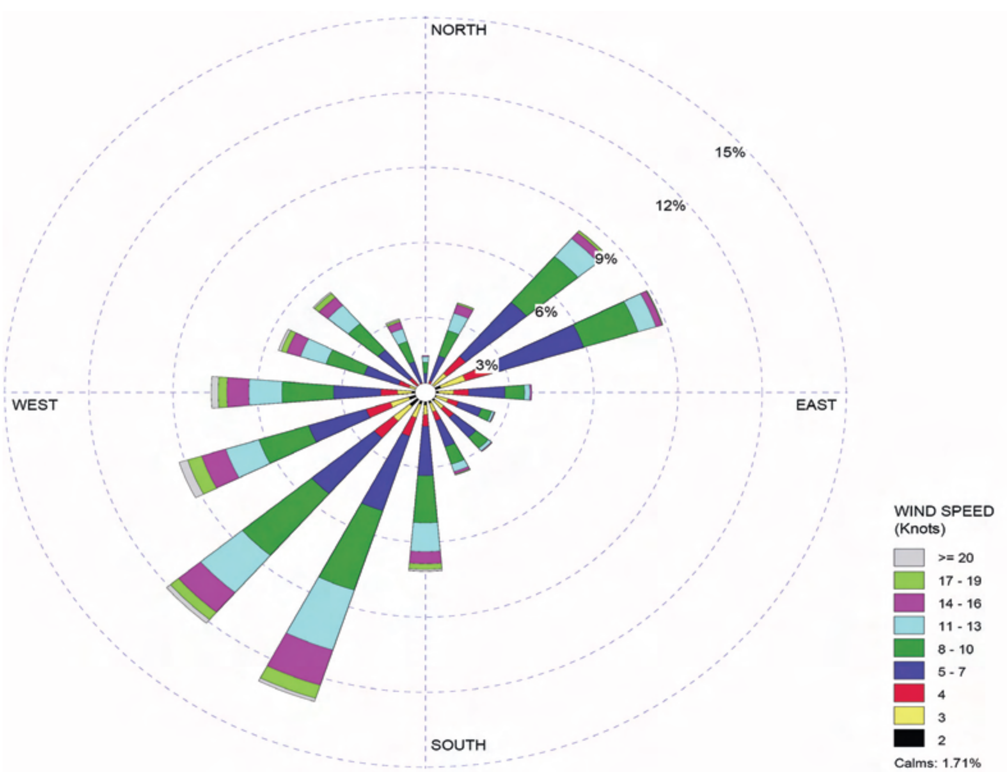

Figure 1–8. 2002–2006 Wind Rose, 197-ft (60-m) Height

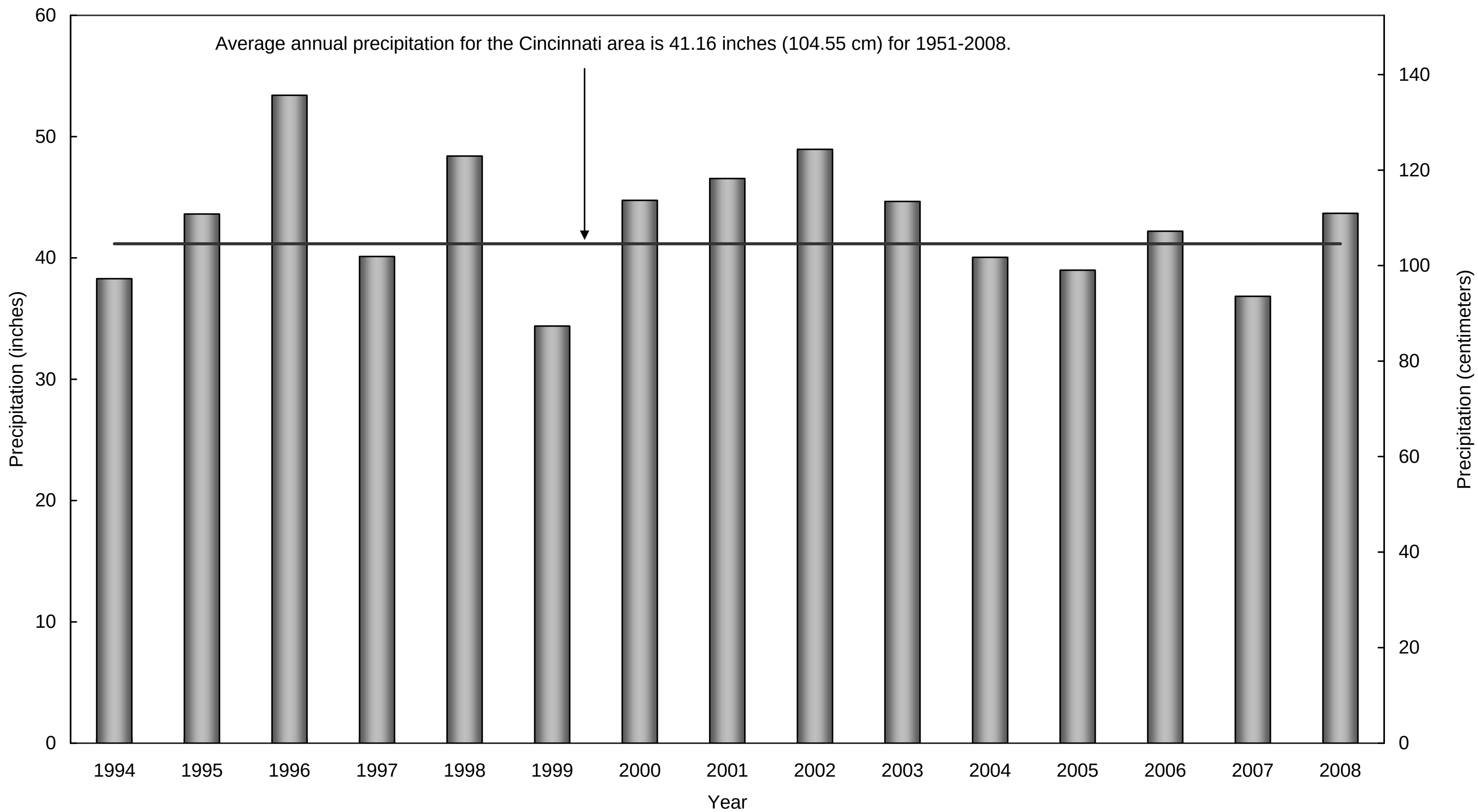

Figure 1–9. Annual Precipitation, 1994–2008

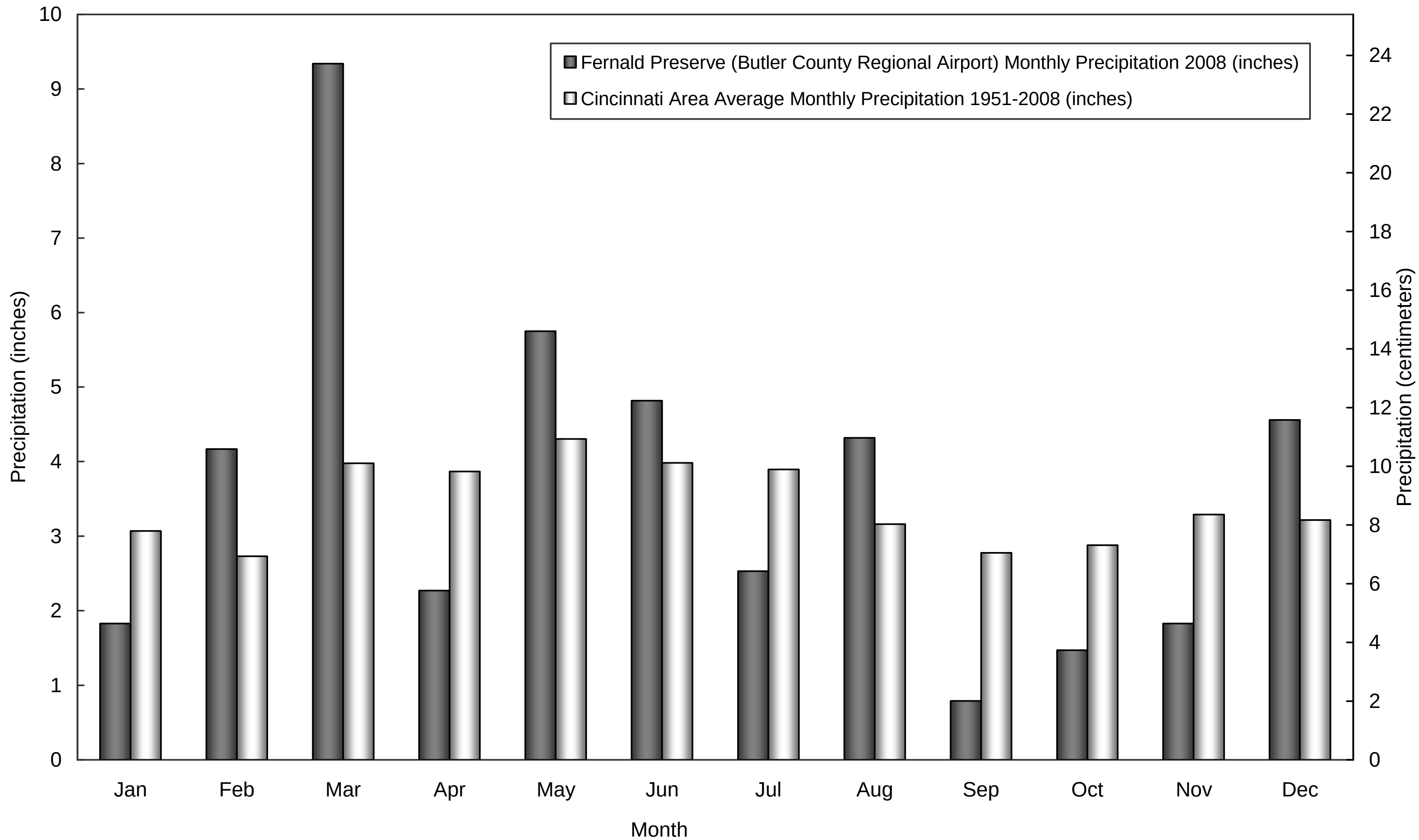

Figure 1–10. Monthly Precipitation for 2008 Compared to Average Monthly Precipitation for 1951–2008