

**Public Outreach in the Post Closure Stage:  
The Fernald Preserve and Weldon Spring Experience— 10354**

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**ABSTRACT**

The U.S. Department of Energy (DOE) Office of Legacy Management's public involvement activities at the Weldon Spring, MO, and Fernald, OH, Sites have come full circle. The two sites have been cleaned up to standards that applicable state agencies and the U.S. Environmental Protection Agency consider protective of human health and the environment. To the extent possible, DOE has reconciled past concerns raised by neighbors and citizens of communities surrounding the sites. Natural features, such as tall grass prairies, upland forests, open water, and wetlands have been restored. The Office of Legacy Management oversees operation and maintenance of the sites to ensure that cleanup remedies continue to comply with regulatory requirements. Both sites have buildings with educational exhibits designed to inform the public about the history, remediation, and maintenance of the sites. These two sites have emerged as important educational and cultural assets and can serve as models for integrating remediated sites into the structure of their neighboring communities.

**INTRODUCTION**

Two former nuclear weapons sites have been cleaned up for reuse. The U.S. Department of Energy (DOE) Office of Legacy Management's public involvement activities at the Weldon Spring, MO, and the Fernald, OH, Sites have come full circle. The two sites have been cleaned up to standards that applicable state agencies and the U.S. Environmental Protection Agency consider protective of human health and the environment. To the extent possible, DOE has reconciled past concerns raised by neighbors and citizens of surrounding communities. Natural features, such as tall grass prairies, upland forests, open water, and wetlands have been restored. The successful cleanup efforts are reflected in the great variety of wildlife species that now inhabit the sites. The Office of Legacy Management oversees operation and maintenance of the sites to ensure that cleanup remedies continue to comply with regulatory requirements.

Each site has a restored building that is regarded as an important educational resource for the public, and perhaps these buildings are the most visible legacy of the years of environmental cleanup.

## **FERNALD PRESERVE HISTORY**

In May 1951, the U.S. Atomic Energy Commission, a predecessor agency of DOE, broke ground on a new uranium-processing facility in a rural area northwest of Cincinnati, Ohio, to support the nation's defense program. Throughout the nearly four decades of the Cold War, the Feed Materials Production Center produced high-grade uranium-metal products for the nuclear weapons complex. The mission was to refine uranium by chemical and metallurgical processes to create products that could be fed into a reactor and made into plutonium. Production operations ceased in 1989, and the site's mission changed to environmental remediation.

With the exception of the ongoing aquifer restoration, the Fernald property was cleaned to standards established by the site's neighbors and surrounding communities. These cleanup standards were approved by both the U.S. and Ohio Environmental Protection Agencies as being protective of human health and the environment.

All the natural features have now been restored on the 1,050-acre property. The goal of the ecological restoration is to turn the property into an undeveloped park with an emphasis on wildlife. The nature preserve that resulted from these efforts has created diverse habitats, which have attracted numerous species of wildlife that thrive in three areas.

- The Fernald Preserve is home to over 140 acres of wetland habitat, including open water, marshland, wet prairies, retention basins, and mud flats.
- The 400 acres of forests at the Preserve include early, successional, riparian, and mature woodlots.
- Over 360 acres of grassland include tall grass prairies, savanna, and pasture.

It is in this setting that public outreach can be successful. Public outreach is an effort by individuals in an organization or group to connect its ideas or practices to the efforts of other organizations, groups, and individuals. The outreach efforts extend to educators, students, families, scouts, home-schooled students, garden clubs, history buffs, former workers, and families.

## **WELDON SPRING SITE HISTORY**

From 1941 to 1945, as part of the World War II defense effort, the U.S. Army produced explosives at the Weldon Spring Ordnance Works, a 17,232-acre facility near Weldon Spring, Missouri, not far from St. Louis. After the war, the federal government transferred ownership of some of this land to the State of Missouri, which used it to create the August A. Busch Memorial Conservation Area. Another portion went to the University of Missouri, which used the land for agricultural study; other parcels went to St. Charles County and the Francis Howell School District. The Army retained the remainder for use as a training area.

In 1955, the Army transferred about 200 acres to the U.S. Atomic Energy Commission for construction of the Weldon Spring Uranium Feed Materials Plant. From 1957 to 1966, this plant processed uranium ore concentrates and a small amount of thorium. Wastes generated during these operations were stored in four open-air lagoons called the raffinate pits.

In 1986, DOE established an office at the Weldon Spring Site and designated the cleanup effort as the Weldon Spring Site Remedial Action Project. Surface remediation concluded with completion of the disposal cell in 2001. The disposal cell covers about 45 acres and provides long-term isolation for 1.48 million cubic yards of chemical and low-level radioactive waste. Ecological restoration activities have resulted in the development of a 150-acre prairie ecosystem at the site. More than 80 species of native prairie grasses and wildflowers provide effective long-term erosion protection for the disposal cell and mimic the prairie that used to exist in the immediate area prior to European settlement.

The site has an active long-term surveillance and maintenance program. Activities consist of conducting regular inspections; conducting environmental monitoring, sampling, and other site operation and maintenance activities; maintaining regulatory compliance; and working with stakeholders and regulators to perpetuate awareness and knowledge of site conditions.

### **FERNALD PRESERVE VISITORS CENTER**

DOE established the Fernald Citizens Task Force in August 1993 as a citizen's advisory board for the Fernald facility. DOE, the U.S. Environmental Protection Agency, and the Ohio Environmental Protection Agency had specific questions they wanted the board to answer. One question was, "What should be the future use of the Fernald Site?" After two years of meetings and discussion, the board recommended to DOE that the Fernald Site should become an undeveloped park with an emphasis on wildlife.

In 2006, the same advisory board, after having completed their 13 years of service, sent a final letter to the Secretary of Energy to be presented to the Office of Legacy Management. In that letter, the group recommended a multi-use education center as a cornerstone of the Fernald community's vision for the future. Fernald stakeholders envisioned a future for the Fernald property that creates a regional center for education about the rich and varied history of Fernald. In addition, they wanted to see a community resource that serves the ongoing information needs of area residents; provides an educational outreach to local academic institutions; is maintained safe, secure, and accessible; is integrated with the surrounding community; effectively controls all residual contamination; and fully maintains all aspects of the ecological restoration.

With the opening of the Fernald Preserve and the Visitors Center in 2008, that vision was realized. The Visitors Center is a 10,800-square-foot reconfigured warehouse that holds exhibits depicting the diverse history of the site and tells the story from the time of Native Americans, to the arrival of settlers and farmers, to the uranium-processing years, to the eventual environmental cleanup and the legacy management period that continues today. The Visitors Center was planned and constructed in a manner to achieve certification

from the U.S. Green Building Council, which sponsors the Leadership in Energy and Environmental Design (LEED) rating system, a nationally accepted benchmark for the design, construction, and operation of high-performance green buildings. The Fernald Preserve Visitors Center achieved a platinum level rating, the highest mark attainable.

At both sites, fully equipped meeting rooms are available for use by the community and school groups. Visits to the sites are exceptional opportunities for classes studying a number of subjects, ranging from history to life sciences.

### **WELDON SPRING SITE INTERPRETIVE CENTER**

One of the goals of the site surveillance and maintenance program is to promote and facilitate public involvement. Active public involvement helps DOE address citizens' concerns and provides additional surveillance input to DOE. DOE encourages public participation through eliciting public comment and providing notice when documents are available. However, one of the most effective means has been through the operation of the Weldon Spring Site Interpretive Center.

The Interpretive Center was constructed from an existing 9,400-square-foot on-site warehouse. The warehouse was remodeled to include a large exhibit display area, a community meeting room, and a storage area that included office space for staff. The Center opened to the public in August 2002. Exhibits include stories from the towns that once occupied the area and displays describing the progression of the cleanup process that resulted in construction of a 45 acre engineered disposal cell. In 2007, in response to increased public demand, a small remodeling effort led to the construction of an additional meeting room and a reorganization of the storage room to separate personnel offices from the equipment storage area. This effort added 1,200 square feet to the Interpretive Center.

### **PUBLIC RESPONSE TO THE TWO CENTERS**

#### **Weldon Spring Interpretive Center**

At the Weldon Spring Site, public use of the Interpretive Center started slowly. Visitation increased primarily through word-of-mouth in the surrounding community. Before long, it became clear that the Center offered unique educational opportunities to school-age children, and positive responses from early visiting groups led to a focus on aligning Interpretive Center programs to the K–12 educational curriculum. Activities currently reach more than 20,000 members of the community each year. The majority of these individuals are actual site visitors, and the rest are recipients of outreach presentations given by site personnel. The Interpretive Center specializes in conducting customized field trips for K–12 schools. Teachers can choose from a variety of educational programs that are aligned with Missouri state curriculum standards. All programs relate to the environmental remediation and restoration performed at the site. Encouraging the public to visit a radioactive waste remediation site is always a challenge. A successful way to approach this issue has been to directly address the areas that are of greatest concern to the public. Therefore, visitors are encouraged to walk on a specially constructed staircase to the viewing platform on top of the disposal cell (Fig. 1). Once on top, visitors can read

informational plaques that describe the construction of the disposal cell and longevity of the encapsulated contaminants. One of the most popular educational programs for visiting schools focuses on teaching the principles of radioactivity. A fun, hands-on activity utilizing Geiger-Mueller counters ensures understanding of these concepts (Fig. 2). So far, response from the public on these and other educational programs offered at the Interpretive Center has been very positive.



Fig. 1. High school students walk to the viewing platform on top of the Weldon Spring disposal cell.



Fig. 2. Sixth grade students test household objects for the presence of radioactivity.

The Interpretive Center has also become a popular meeting spot for community-based organizations. The TNT Reunion Group is an organization of individuals whose families lost land to the building of the Weldon Spring Ordnance Works. This group has been meeting annually for more than 40 years and has held their well-attended annual event at the Center since 2003. The Center also supports events associated with former uranium workers, such as the 2005 creation and unveiling of a new exhibit that gives tribute to these workers, and the recent National Day of Remembrance for Nuclear Weapons Workers held on October 30, 2009. Other groups using the Center facilities include garden clubs, historical societies, a woodcarving association, and naturalist groups. Several of the garden clubs and one of the naturalist groups even provide active volunteers that ‘adopt’ plant beds in the native gardens surrounding the Center to provide landscape maintenance services.

### **Fernald Visitors Center**

More than 10,000 people came through the Fernald Visitors Center during its first year of operation, and countless others walk the trails daily. Some visitors have no connection to the manufacturing time period; to them, it is merely another place for nature exploration and family time. Former workers find the site a place to bring their families and tell stories of “the old days.” School visits are now regular occurrences. The programs are designed to enhance a school’s curriculum by providing hands-on, outdoor experiences. Lessons emphasize habitat variety, local plants and animals, and their interdependence. Students investigate pond and stream ecosystems, forest and prairie ecology, food chains, life cycles, and classification (Figs. 3 and 4). The Visitors Center’s status as a certified LEED platinum building provides opportunities for lessons in sustainability and smart building practices and leads to more educational opportunities.

Visitors Center staff members are now cultivating and serving a new stakeholder base, while respecting the needs of those who have been a part of the site’s history and mission. Clientele focus has shifted. The needs of the new audience include lessons plans, an understanding of scout requirements, birding and nature observation, fact sheets and promotional materials, and holding public meetings.

The community meeting room has also proven to be a boost for public outreach. The room was designed to be used for educational programs and meetings related to the Fernald Preserve. When it is not needed for Fernald Preserve activities, it is available free of charge for use by the public. Since the center opened, over 2,000 people and 50 groups have reserved the room. Schools, universities, senior centers, garden clubs, and others have used the room for annual meetings, dinners, and educational speakers.

Another component to public outreach at the Fernald Preserve is the network of trails and overlooks that have recently opened. The trail system allows access to the preserve’s various habitats and ecosystems. Over 7 miles of trails meander through the preserve and vary in length, difficulty, and highlights. Shorter flat gravel trails around the Visitors Center offer views of the building biowetlands, the former production area, and memorial trees recognizing the contributions made by the Fernald site and its employees during the

Cold War years. Longer, more challenging trails allow walkers to pass through tall grass prairies, mature forests, wetlands, vernal pools, and open water. This outdoor system is a great place to hike, learn about natural history, enhance the educational lessons, or find a quiet spot to commune with nature.



Fig. 3. Students investigate wetland creatures at the Fernald Preserve.



Fig. 4. Avian surveys can be incorporated into school visits to the Fernald Preserve.

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