DOE/EA-1387

# Environmental Assessment for Proposed Wetlands Management on the Argonne National Laboratory-East Site

U.S. Department of Energy


September 2001

**U. S. Department of Energy**

**Finding of No Significant Impact**
**Proposed Wetlands Management on the**
**Argonne National Laboratory-East Site**
**Argonne, Illinois**

**AGENCY:** **U. S. Department of Energy**

**ACTION:** **Finding of No Significant Impact (FONSI)**

**SUMMARY:** The Department of Energy (DOE) has prepared an Environmental Assessment (EA) DOE/EA-1387, evaluating a proposed wetlands management program at Argonne National Laboratory-East (ANL-E), Argonne, Illinois.

DOE proposes to implement a wetland management program at ANL-E to maintain and enhance wetland resources and improve wetland function. The specific goals of wetland management would be to (1) increase biodiversity in wetland communities, (2) improve surface water and groundwater quality within watersheds of wetlands, and (3) maintain or increase total wetland area on the ANL-E site.

Based on the analysis in the EA, DOE has determined that the proposed action does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969 (NEPA). Therefore, the preparation of an Environmental Impact Statement is not required.

**DESCRIPTION OF THE PROPOSED ACTION:** The proposed action would be an ongoing activity. It would include a number of activities both within wetlands and in adjacent upland areas: invasive plant species would be removed by the application of herbicide or by cutting or pulling; seeds and live plants would be planted where invasive species have been removed or where there is a low diversity of native species; prescribed burns would be conducted to increase native species populations and reduce non-native species; wetland communities would be monitored regularly to assess wetland condition; wetland boundary delineations would be updated and recorded on the ANL-E site map; and compensatory mitigation would be provided for all wetland losses by the establishment of new wetland areas on the ANL-E site.

Wetland management will initially entail the restoration of a drained wetland to develop wetland compensatory mitigation for past and future wetland impacts. The DOE would restore a historical wetland at ANL-E by disabling a drain tile network that was installed more than 50 years ago. One acre (0.4 ha) of the restored wetland would replace a small former wetland on the ANL-E site. The DOE would use the remainder of the restored wetland [up to 5.6 acres (2.3 ha)] as compensatory mitigation for future projects, with approval of the U.S. Army Corps of Engineers for projects affecting wetlands regulated under the Clean Water Act.

Other Areas of Impact: Implementation of the proposed action is expected to result in negligible impacts on land use, aesthetics, noise, soils, air resources, transportation, human health, waste management, and environmental justice.

Environmental Justice: No adverse environmental impacts would occur beyond the ANL-E site. Therefore, no minority or low-income group would receive disproportionately high adverse effects as a result of implementation of the proposed action.

Cumulative Impacts: The incremental impact of the proposed action would not be significant if added to all other past, present and reasonably foreseeable future actions at ANL-E. No known off-property activity is adversely affecting human health or the environment on the ANL-E property or in immediately adjacent areas. Implementing the proposed action would improve groundwater levels in the ANL-E vicinity.

**DETERMINATION:** Based on the analysis in the EA, the DOE has determined that the proposed wetland management program at Argonne National Laboratory-East does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969. Therefore, an Environmental Impact Statement on the Proposed Action is not required.

**PUBLIC AVAILABILITY:** Copies of the EA (DOE/EA-1387) are available from:

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Issued in Argonne, Illinois, this 19th Day of September 2001

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DOE/EA-1387

# ENVIRONMENTAL ASSESSMENT FOR PROPOSED WETLANDS MANAGEMENT ON THE ARGONNE NATIONAL LABORATORY-EAST SITE

## U.S. DEPARTMENT OF ENERGY

## September 2001

## CONTENTS

## ACRONYMS, INITIALS, AND ABBREVIATIONS

The following is a list of the acronyms, initials, and abbreviations (including units of measure) used in this document.

| | |
|---|---|
| ANL-E | Argonne National Laboratory-East |
| APS | Advanced Photon Source |
| BLS | Bureau of Labor Statistics |
| COE | Corps of Engineers (U.S. Army) |
| CFR | *Code of Federal Regulations* |
| cm | centimeter(s) |
| d | day(s) |
| DOE | U. S. Department of Energy |
| EA | environmental assessment |
| E.O. | Executive Order |
| EPA | U.S. Environmental Protection Agency |
| ft | foot (feet) |
| $ft^3$ | cubic foot (feet) |
| gal | gallon(s) |
| GIS | geographic information system |
| h | hour(s) |
| ha | hectare(s) |
| in. | inch(es) |
| km | kilometer(s) |
| L | liter(s) |
| m | meter(s) |
| $m^3$ | cubic meter(s) |
| mi | mile(s) |
| mph | mile(s) per hour |
| MSL | mean sea level |
| NEPA | National Environmental Policy Act |
| NRHP | National Register of Historic Places |
| s | second(s) |
| SHPO | State Historic Preservation Officer |
| yr | year(s) |

# SUMMARY

The U.S. Department of Energy (DOE) proposes to implement a wetland management program at Argonne National Laboratory-East (ANL-E) to maintain and enhance wetland resources and improve wetland function. The specific goals of wetland management would be to (1) increase biodiversity in wetland communities, (2) improve surface water and groundwater quality within watersheds of wetlands, and (3) maintain or increase total wetland area on the ANL-E site.

Management of wetland resources is intended to fulfill the requirements of Executive Order 11990, *Protection of Wetlands;* Title 10 of the *Code of Federal Regulations* (CFR), Part 1022; Executive Order 13112, *Invasive Species*; Executive Order 13148, *Greening the Government Through Leadership in Environmental Management*; and Section 404 of the Clean Water Act.

The proposed action would include a number of activities both within wetlands and in adjacent upland areas: invasive plant species would be removed by the application of herbicide or by cutting or pulling; seeds and live plants would be planted where invasive species have been removed or where there is a low diversity of native species; prescribed burns would be conducted to increase native species populations and reduce non-native species; wetland communities would be monitored regularly to assess wetland condition; wetlands would be identified and wetland boundaries would be delineated on the ANL-E site map; and compensatory mitigation would be provided for all wetland losses by the establishment of new wetland areas on the ANL-E site.

Wetland management will initially entail the restoration of a drained wetland for the development of wetland compensatory mitigation on the ANL-E site. The DOE would restore a historical wetland at a site approximately 130 ft (40 m) northwest of the Advanced Photon Source (APS) facility (Figure 3.1), along the south branch of Freund Brook. Agricultural drainage tiles buried on the site would be located, excavated, and destroyed. Topsoil and subsoil above the tiles would be excavated by backhoe or similar device, the tiles would be crushed, and the fragments mixed with the soil remaining in the trench. The excavated soil would then be replaced.

The restored wetland area would serve as compensatory mitigation for past and future wetland impacts. One acre (0.4 ha) of the restored wetland would replace a small former wetland on the ANL-E site. The DOE would use the remainder of the restored wetland as compensatory mitigation for future projects.

A subalternative under the proposed action and a no-action alternative were considered. Under the surface water impoundment subalternative, all activities associated with the proposed action would be carried out, including the removal of drainage tiles at the mitigation site, and in

# 1 INTRODUCTION

This environmental assessment (EA) has been prepared by the U.S. Department of Energy (DOE) in compliance with the National Environmental Policy Act of 1969 (NEPA) to evaluate the potential environmental impacts associated with proposed wetland management activities at Argonne National Laboratory-East (ANL-E) in DuPage County, Illinois (Figure 1.1). The proposed wetland management activities are intended to increase wetland conservation on the ANL-E site and to provide mitigation of potential future impacts to wetlands resulting from Laboratory programs.

Wetlands provide a number of valuable functions within the landscape, making their conservation an important component of site-wide management. Surface water storage in wetlands provides for the absorption of storm-water flows, reducing downstream flood peaks and subsequent damage from flood waters. Wetlands also help maintain water quality by the removal of dissolved substances, sediments, and contaminants. Many fish and wildlife species depend on wetland habitat; these species add to the recreational and aesthetic values of wetlands.

## 1.1 BACKGROUND

The DOE is responsible for land stewardship of the ANL-E site. Several Executive Orders and other Federal documents guide DOE's land stewardship responsibilities (see Section 1.2). Land stewardship involves the management of natural resources, including wetlands, to protect them for future generations; to allow for the multiple use of Federally owned natural resources, where possible; and to preserve or protect the beneficial values of healthy ecosystems.

Recognizing their land stewardship responsibilities, the DOE and ANL-E belong to Chicago Wilderness, a partnership of more than 100 public and private organizations that have joined to protect, restore, and manage natural areas in the Chicago region. The DOE supports the goals of the Chicago Wilderness Biodiversity Recovery Plan and has incorporated those goals into its management of the ANL-E site.

The DOE must also comply with the requirements of Section 404 of the Clean Water Act which is administered in Illinois by the U.S. Army Corps of Engineers (COE). Section 404 prohibits the discharge of dredged or fill material into waters of the United States, including wetlands, without a permit. Wetlands that are adjacent to waters of the United States or adjacent to tributaries of waters of the United States are regulated under the Clean Water Act. Isolated wetlands, however, are not under the jurisdiction of the Clean Water Act. *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers*, 531 U.S. 159 (S.Ct. 2001).

The COE Chicago District Office has established a Regional Permit Program for activities that impact regulated wetlands in northeast Illinois. The COE authorizes activities under this program that have minimal individual and cumulative impacts on the aquatic environment. Impacts to wetlands are to be avoided and minimized if possible. Where impacts are unavoidable and would affect more than 0.25 acre (0.1 ha) of wetlands, compensatory mitigation is typically required. Generally, 1.5 acres, or 0.6 hectares, of new wetland must be established to compensate for each acre, or hectare, of wetland impacted (1.5:1 compensation ratio).

Requirements for compensatory mitigation are normally established during the permitting process. However, the COE sometimes allows advanced compensatory mitigation for potential future wetland impacts. This procedure can simplify the permitting process and provide more ecological benefits. The permitting process for future projects that cannot avoid wetland impacts would be simplified because mitigation for the impacts would have been established before the permit process began.

The DOE has provided compensatory mitigation on the ANL-E site for past wetland impacts from the construction of the Advanced Photon Source (APS) in 1991. The COE required the DOE to create a 1.8-acre (0.7-ha) wetland to compensate for the loss of two small wetlands. The DOE also agreed to protect a third small wetland that was located about 110 ft (34 m) southwest of the APS project by putting a fence around it and keeping construction equipment out. The DOE protected this wetland during construction of the APS in accord with permit requirements. After construction was completed, however, the hydrology of this 1.0-acre (0.4-ha) wetland began to decline. By the spring of 2000, wetland hydrology was no longer present.

The DOE has committed to replace the former wetland that was located to the southwest of the APS. Accordingly, the DOE evaluated potential mitigation locations at ANL-E and determined that an area northwest of the APS facility appears to be suitable for wetland restoration. This area (shown in Figure 1.2) is sufficiently large to provide compensatory mitigation for the former wetland to the southwest of the APS and for other wetlands at ANL-E that could be affected by future projects involving impacts to wetlands that cannot be avoided. Wetlands could be restored at this location by raising groundwater levels that have been lowered by a network of agricultural drainage tiles. These tiles, which are buried approximately 3 ft (0.9 m) below the soil surface, drain shallow groundwater from the area (see Section 1.3 for a detailed discussion of the drainage tiles). The suitability of the restored wetlands for use as compensatory mitigation and applicability for project impacts would require COE and DOE approvals. Other alternative locations for wetland mitigation on the ANL-E site were considered; however, these other sites were not analyzed in detail because of their lower ecological value, smaller mitigation potential, and increased cost.

## 1.2 FEDERAL POLICY, GUIDELINES, AND REQUIREMENTS

The following policies, guidelines, and requirements establish the DOE's land stewardship responsibilities:

- Executive Order (E.O.) 11990, *Protection of Wetlands*, requires Federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.

- E.O. 11988, *Floodplain Management*, calls for Federal agencies to reduce the risk of flood loss; minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains.

- E.O. 13112, *Invasive Species*, calls on Federal agencies to control populations of invasive species in a cost-effective and environmentally sound manner and provide for restoration of native species and habitat conditions in ecosystems that have been invaded.

- E.O. 13148, *Greening the Government Through Leadership in Environmental Management, and Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds*, directs Federal agencies to promote the sustainable management of Federal lands through cost-effective, environmentally sound landscaping practices and programs to reduce adverse impacts to the natural environment.

- Title 10 of the *Code of Federal Regulations*, Part 1022 (10 CFR 1022), sets forth DOE regulations for implementing E.O. 11990, *Protection of Wetlands*, and E.O. 11988, *Floodplain Management.*

## 1.3 AGRICULTURAL DRAINAGE TILES

Historically, agricultural drainage tiles were installed in many wetland areas of northern Illinois, including the area that is now the ANL-E site, to facilitate agricultural production. The tiles, generally consisting of clay pipes 4 to 8 in. (10 to 20 cm) in diameter, were typically laid end-to-end at a depth of 2.5 to 3.5 ft (0.76 to 1.07 m) below the soil surface. The tiles direct shallow groundwater toward a suitable discharge point, usually a nearby stream. On the ANL-E site, agricultural drainage tiles are known to cross the proposed wetland mitigation site and may occur in other areas as well. The age of these tiles is not known; however, they were in place

# 2 PURPOSE AND NEED

The purpose of the proposed action is to maintain and enhance wetland resources on the ANL-E site and increase flexibility in managing those resources.

# 3 PROPOSED ACTION AND ALTERNATIVES

## 3.1 PROPOSED ACTION

The DOE is proposing to develop and implement wetland management activities to maintain and enhance wetland resources on the ANL-E site and improve wetland function. The DOE is proposing a wetland management strategy to achieve the following goals on the ANL-E site: (1) increase biodiversity in wetland communities, (2) improve surface water and groundwater quality within wetland watersheds, and (3) maintain or increase total wetland area on the ANL-E site.

Wetland management goals would be met through a number of long-range strategies. Biodiversity of wetland communities would be increased by management of populations of both wetland and upland plant species. Populations of non-native plant species and invasive native species would be reduced or eliminated within wetlands and adjacent upland areas. Concurrently, populations of non-invasive, native plant species currently present within wetlands and adjacent upland areas on the ANL-E site would be increased. Native plant species would also occasionally be introduced into areas having low native species diversity. The methods that the DOE would use to manage wetlands at ANL-E, as detailed below, are further described in the Argonne National Laboratory-East Wetland Management Implementation Plan (Argonne National Laboratory 2001).

In addition, the DOE would provide, on the ANL-E site, compensatory mitigation for potential future wetland losses. In compliance with E.O. 11990 and 10 CFR 1022, the DOE's goal would be to avoid wetlands. However, in cases when avoidance was not feasible, DOE would mitigate unavoidable impacts to wetlands on the ANL-E site from future programmatic activities through the creation of additional wetland areas.

Management of wetlands on the ANL-E site, in accordance with the Wetland Management Implementation Plan, would include a number of activities required to implement these long-range strategies:

- Invasive species would be removed by the application of herbicide in wetlands and adjacent upland areas. Herbicides would be used in areas of extensive infestation by non-native or invasive native species. Species targeted for herbicide application would include highly aggressive species such as common reed (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), purple loosestrife (*Lythrum salicaria*), crown vetch (*Coronilla varia*), and Canada thistle (*Cirsium arvense*). Species identified for removal would vary by location. In areas with a large component of desirable native species, invasive species would be manually removed by hand-cutting or

excavated, and destroyed on the ANL-E site. Excavation of drainage tiles would require the removal of topsoil and subsoil, by backhoe or similar device, immediately above the tile line, creating a shallow trench. The tiles would be crushed by the backhoe and the fragments mixed with the soil remaining in the trench. The excavated subsoil would be replaced first, followed by the topsoil. Silt fencing, hay bales, and other appropriate measures would be used to control sediment and prevent erosion, both during and after tile destruction. ANL-E environment, safety and health procedures would be utilized at all times. DOE would complete additional NEPA review for tile removals that are not explicitly addressed in this EA.

A major component of wetland management would entail the restoration of a drained wetland to provide compensatory wetland mitigation on the ANL-E site. Under the proposed action, the DOE would restore a historical wetland at a site approximately 130 ft (40 m) northwest of the APS facility (Figure 3.1) along the south branch of Freund Brook. This site contains a network of agricultural drainage tiles extending from west of Kearney Road, on ANL-E and DuPage County Forest Preserve District land, and discharging to the north (Figure 3.2). Wetland hydrology would be restored to this area by disabling the tiles. More than 3,400 linear ft (1,037 m) of drainage tiles would be disabled, including approximately 250 ft (76 m) on ANL-E property west of Kearney Road. Approximately 1,600 linear ft (485 m) of these drainage tiles are located in existing wetland areas, with more than 1,800 linear ft (549 m) in upland areas. An estimated 2,500 linear ft (762 m) of lateral tiles draining into the main tile lines would also be disabled.

Herbicide would be applied to areas of the site vegetated with predominantly invasive species. Following the elimination of invasive species, seeds and plants of native wetland or upland species would be planted in those areas, depending on the restored moisture gradient. Prescribed burns would be conducted in upland and wetland communities at 2- to 5-year intervals, beginning with the third year following planting.

The goal of the project would be to develop at least 1 acre (0.4 ha) of palustrine emergent wetland types with a hydrologic gradient from semipermanently flooded to seasonally saturated hydrologic regimes; however, up to 6.8 acres (2.8 ha) of wetland types could potentially be developed. These wetland types would include shallow marsh and wet prairie communities. The restored wetland area would serve as compensatory mitigation for past and potential future wetland impacts. As indicated in Section 1.1, 1 acre (0.4 ha) of the restored wetland would replace a small former wetland on the ANL-E site. The DOE would use the remainder of the restored wetland as advance compensatory mitigation for potential future projects.

The DOE would monitor wetland vegetation and hydrology to assess the success of the restoration. Plant species would be identified and recorded along with the coefficient of conservatism given for each species in *Plants of the Chicago Region* (Swink and Wilhelm 1994). The coefficients of conservatism would be averaged to give a mean index of conservatism for the

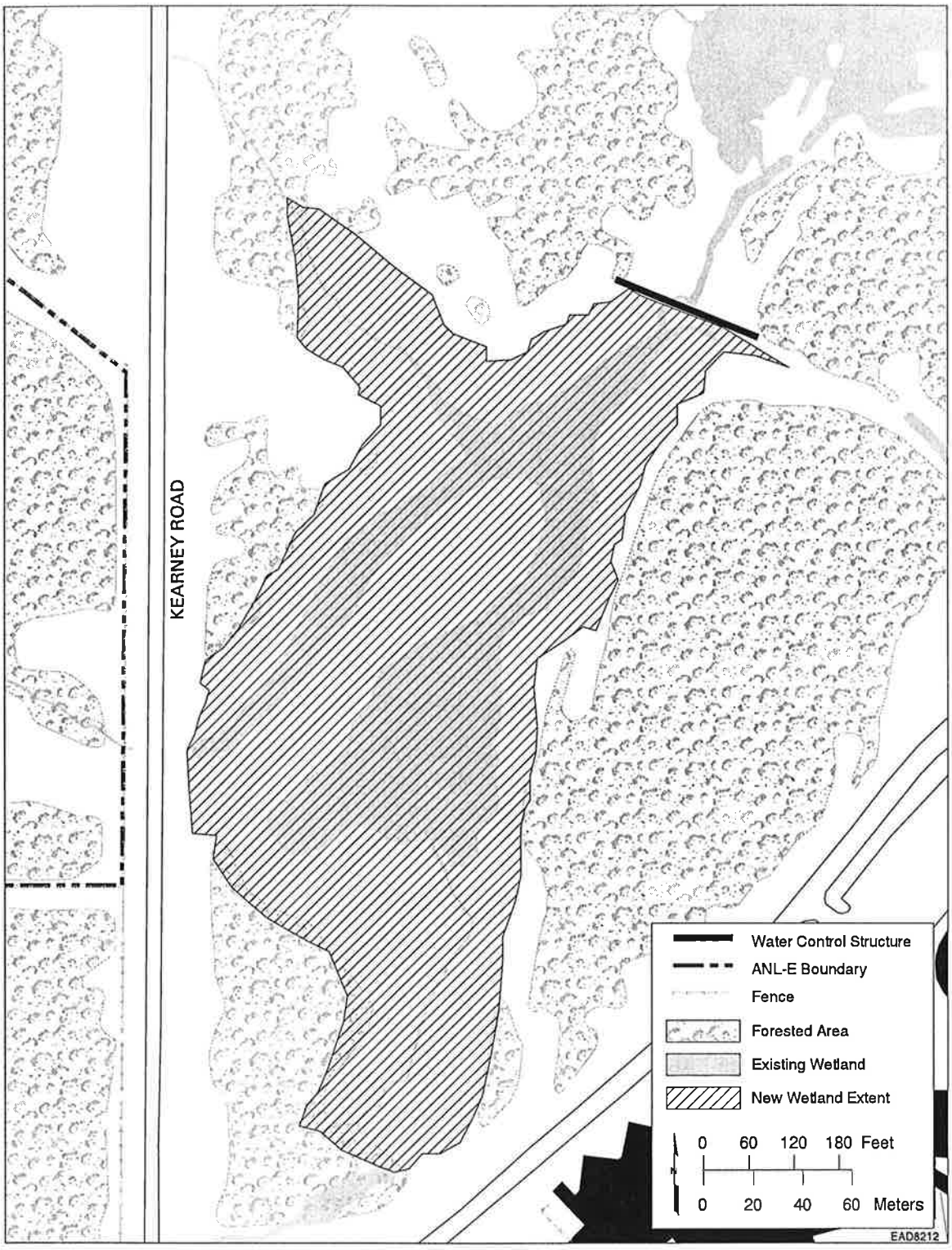


**FIGURE 3.2 Layout of the Surface Water Impoundment Subalternative**

the impounded water. The maximum surface elevation of the impoundment would be 730 ft (223 m) mean sea level (MSL).

Maximum restriction of surface flows from the mitigation site would be instituted early in the growing season. Restricted flows would result in an increasing area of inundation on the mitigation site until mid-summer. The surface elevation of the impounded water would then be gradually lowered by increasing releases through the control structure. The decreasing area of inundation would create areas of varying hydrology on the mitigation site. Hydrologic conditions developed on the site would range from semipermanently flooded to seasonally flooded and saturated. Areas of permanent open water would be avoided.

The total area inundated on the mitigation site in a given year would vary with annual precipitation. The maximum inundation to 730 ft (223 m) MSL would create a total wetland area of approximately 10.0 acres (4.0 ha), including 3.2 acres (1.3 ha) of existing wetland. Thus, under this subalternative, up to 6.8 acres (2.8 ha) of new wetland would be established. New wetland areas would include shallow marsh, wet prairie, and sedge meadow wetland communities.

## 3.3 NO-ACTION ALTERNATIVE

Under the no-action alternative, the DOE would not develop a wetland management program for the ANL-E site. No long-range strategy would be undertaken to increase biodiversity in wetland communities, improve surface water and groundwater quality within wetland watersheds, or increase total wetland area on the ANL-E site. Under the no-action alternative, mitigation for the loss of the small former APS-area wetland would not be developed. Agricultural drainage tiles would not be disabled, and new wetland areas would not be established for advance compensatory mitigation.

The DOE, however, would continue to avoid or minimize impacts to wetlands, in compliance with Executive Order 11990 and 10 CFR Part 1022. The boundaries of wetlands in areas of potential impact would be identified and mapped. Potential impacts to wetlands would continue to be reviewed and assessed through the NEPA process and floodplain/wetland assessments. Restoration of the wetland and adjacent uplands would continue at the APS wetland mitigation site, southeast of the APS facility.

In addition, under the no-action alternative, habitat restoration in upland areas on ANL-E would continue. Restoration activities include the removal of non-native species from natural areas and planting of native species, as well as the re-establishment of native habitats such as prairie and savanna. Methods used for restoration include prescribed burning, cutting, and herbicide application.

# 4 AFFECTED ENVIRONMENT

## 4.1 SITE DESCRIPTION

The ANL-E site occupies about 1,500 acres (607 ha) in DuPage County, Illinois, 25 mi (40 km) southwest of Chicago (Figure 1.1). The 2,040-acre (826-ha) Waterfall Glen Forest Preserve surrounding the ANL-E site is mostly former ANL-E property that was deeded to the DuPage County Forest Preserve District in 1973 for use as a public recreational area and nature preserve. The Des Plaines River, the Chicago Sanitary and Ship Canal, and the Illinois and Michigan Canal are located 1 mi (1.6 km) south of the ANL-E site.

The terrain of ANL-E is gently rolling, with approximately 57% of the site dedicated to scientific research and development programs. The remainder consists of woodlands, fields, and wetlands. The largest stream on the ANL-E site is Sawmill Creek, which runs though the eastern portion of the property in a southerly direction and enters the Des Plaines River southeast of the ANL-E site. The southern portion of Waterfall Glen Forest Preserve slopes steeply down to the Des Plaines River floodplain.

Waterfall Glen Forest Preserve and the area to the south between the Forest Preserve and the Des Plaines River are largely undeveloped. Beyond Waterfall Glen Forest Preserve, the residential population density increases rapidly, especially to the northeast. The closest residents to the ANL-E site are located about 0.3 mi (0.5 km) west of the ANL-E 800 Area. The nearest residence to the mitigation site is approximately 0.5 mi (0.9 km) to the southwest.

## 4.2 GEOLOGY AND SOILS

The ANL-E site is located on a glacial till plateau that forms a complex arrangement of hills and depressions forming the Valparaiso Moraine, which trends northwest-southeast (DOE 1997). The glacial till that covers the area consists of a heterogeneous mixture of silt, clay, and sand. Deposits of sand gravel occur as discontinuous lenses throughout the till. Silurian dolomite forms the bedrock surface that has an average depth of 92 ft (28 m) beneath the glacial till and crops out along bluffs adjacent to the Des Plaines River Valley south of the facility.

Strata immediately underlying the surficial till are identified as belonging to the Kankakee Formation of the Alexandrian Series, lowermost Silurian System (DOE 1990). The subcropping weathered zone of the uppermost stratum is up to 35 ft (10 m) thick. This zone shows significant evidence of solution weathering and fracturing. Beneath this zone, the rock is generally unfractured and unaltered.

believed to be caused by isostatic adjustments of the earth's crust in response to glacial loading and unloading, rather than motion along crustal plate boundaries.

Ground motions induced by near and distant seismic sources in northern Illinois are expected to be minimal (DOE 1990). Peak accelerations in the ANL-E area may exceed 10% of gravity about once in 600 years. This acceleration is the approximate threshold for major damage. The uncertainty of the return period is 250 to 450 years.

## 4.3 WATER RESOURCES

The ANL-E regional climate is characterized as continental, with relatively cold winters and hot summers (DOE 1990). A slight modification to the climate is produced by ANL-E's proximity to Lake Michigan. The average daily air temperature at ANL-E is 48°F (8.9°C). Average daily variations in air temperature range from 13.7°F (7.6°C) in December to 20.5°F (11.4°C) in May.

The average annual precipitation at ANL-E is 31.5 in. (80 cm) (DOE 1990). It is primarily associated with thunderstorms in the spring and summer. The area experiences about 40 thunderstorms annually. These storms can be accompanied by hail, damaging winds, and tornadoes. The average annual accumulation of snow and sleet is 32.7 in. (83 cm). Snowstorms that produce more than 5.9 in. (15 cm) occur only once or twice each year on average, and severe ice storms occur only once every 4 or 5 years.

Pan evaporation from an area near ANL-E (DeKalb, Illinois) averaged about 37.3 in./yr (95 cm/yr) (ISCO 2000). Correcting for open water conditions by multiplying by a 0.75 lake-to-pan evaporation coefficient (Linsley et al. 1982) gives an annual average evaporation of 28 in. (71.1 cm).

### 4.3.1 Surface Water

Sawmill Creek flows through the eastern portion of ANL-E (Figure 4.1). This perennial stream originates north of the site, flows through the property in a southerly direction, and discharges into the Des Plaines River (DOE 1997). Two small streams originating on the ANL-E property and combine to form Freund Brook, which discharges into Sawmill Creek.

Along the southern margin of the site, the terrain slopes abruptly downward and forms forested bluffs. These bluffs are dissected by ravines that contain intermittent streams that discharge into the Des Plaines River. In addition to the streams, various ponds and cattail marshes are present. A network of ditches and culverts transports surface runoff toward the smaller streams.

Residential and commercial development in the area has led to collection and channeling of runoff water into Sawmill Creek. Treated sanitary and laboratory wastewaters from ANL-E are combined and discharged into lower Sawmill Creek. In the vicinity of ANL-E, drinking water is obtained from Lake Michigan (DOE 1997).

Four drainages that may have intermittently flowing water are located at ANL-E. Of these drainages, one originates just west of the site, crosses Kearney Road, and drains north to Freund Brook. This drainage crosses the proposed mitigation site (Van Lonkhuyzen et al. 1999). Freund Brook then flows to the east-northeast and enters Sawmill Creek, which flows south to the Des Plaines River. Field observations of Freund Brook suggest that the stream discharge averages less than 3 $ft^3/s$ (0.08 $m^3/s$). Peak flows in the creek are estimated to be less than 21 $ft^3/s$ (0.6 $m^3/s$).

Topographic maps of the mitigation site dating from 1946 do not show a stream or drainage in that area; however, a local depression was located at the mitigation site. This depression currently supports an emergent wetland. The mitigation site contained a beaver pond from 1986 to 1993. At that time, the area supported a wetland of about 8 acres (3.2 ha). An unnamed intermittent stream flows into the mitigation site from the southwest, and a small drainage enters from the northwest. The flow within the main stream channel is moderately high in the growing season. Approximately 200 ft (61 m) northeast of the mitigation site, the stream enters a large wetland area before continuing east as a perennial stream. The area near the stream is classified as environmentally sensitive because it is located within the 100-year floodplain.

Agricultural drain tiles cross the proposed mitigation site, which lies in a watershed encompassing about 75 acres (30 ha) (Figure 4.1). The results of a walk-over investigation of the area indicated the presence of three trunk drainage lines east of Kearney Road (Figure 3.1). Two of these lines enter the mitigation site on the south and west and exit to the northeast. The third line enters from the north and connects to the other two lines north of an existing wetland. After combining, the main lines probably continue to the northeast and direct water in the direction of the local topographic gradient (Figure 3.1). The trunk lines average about 2.5 ft (0.8 m) deep.

To date, laterals from the trunk lines east of Kearney Road have not been identified, although their presence is inferred. The spacing of the laterals can be estimated on the basis of the Sawmill silty loam soil present and the climatic conditions at ANL-E (Tomasko 2000). This spacing ranges from about 110 to 340 ft (33.5 to 104 m) for removing the entire annual precipitation (31.5 in. [80.0 cm], 197 acre-ft [243,000 $m^3$]) to removing the entire annual precipitation less water lost to evaporation (3.2 in. [8.1 cm], 22 acre-ft [27,000 $m^3$]), respectively. The actual geometry of the drain-tile field would become apparent during excavation and removal.

Trunk lines west of Kearney Road have also been postulated (Figure 3.1); their presence has not been verified. The northern trunk line west of Kearney Road appears to run beneath an ephemeral stream bed that has fairly steep banks. The southern trunk line west of Kearney Road is located in a small, flat region that covers about 3 acres (1 ha). Laterals probably exist in the

box elder, cottonwood, downy hawthorn, and common buckthorn. Coniferous forest totals about 100 acres (40 ha) and is dominated by jack pine, white pine, or red pine.

Old-field habitats are dominated by non-native grasses and forbs, with occasional mixtures of agricultural grasses and native prairie grasses and forbs (Messenger et al. 1969). Areas dominated by native prairie plants occur in the eastern and southwestern portions of ANL-E. Terrestrial plant communities at disturbed areas at ANL-E are dominated by non-native weedy species or species widely planted for erosion control. These communities typically include tall fescue, smooth brome, quack grass, trailing crown vetch, Canada thistle, chicory, and wild carrot, among others. Mowed lawns occur in the facility areas, Argonne Park area, and roadsides.

A diverse assemblage of wildlife species occurs at ANL-E. Messenger and associates (1969) listed over 120 vertebrate species at ANL-E, and many others have since been identified. Common species include American toad, western chorus frog, green frog, northern water snake, eastern garter snake, mallard, Canada goose, mourning dove, blue jay, American crow, American robin, European starling, common grackle, common yellowthroat, song sparrow, northern cardinal, striped skunk, opossum, woodchuck, eastern chipmunk, fox squirrel, muskrat, deer mouse, short-tailed shrew, and white-tailed deer. An unusual species at ANL-E is the fallow deer (*Dama dama*), a European species introduced by the former landowner prior to Government acquisition of the property.

### 4.4.2 Wetland and Aquatic Resources

Wetlands are a common feature of the northern Illinois landscape, although many wetlands have been drained for agricultural purposes or lost due to urban development. Many wetlands of the region, including those on the ANL-E site, are the result of glacial activity, such as scouring of depressions, deposition of various glacial materials, and development of drainageways. Numerous shallow depressions and drainages support wetlands at ANL-E (Van Lonkhuyzen et al. 1999). Jurisdictional wetlands of ANL-E were delineated in 1993 (Van Lonkhuyzen and LaGory 1994). Thirty-five jurisdictional wetlands were delineated, totaling 44.6 acres (18.1 ha). This total did not include the 1.8-acre (0.7-ha) wetland created southeast of the APS facility to mitigate losses of two small wetlands associated with APS construction. Wetlands smaller than 0.12 acre (0.05 ha) were not delineated.

Wetland types that occur at ANL-E include floodplain or riparian wetlands, forested wetlands, and marshes. Some of the wetlands of recent origin and have been formed as a result of human or beaver activities. Beaver dams have created five wetlands along intermittent streams at ANL-E; these wetlands total 22.6 acres (9.1 ha) (Van Lonkhuyzen and LaGory 1994). However, some beavers and beaver dams have been removed at ANL-E to eliminate flooding of roadways and other areas (USDA 1995). No dams have been removed at ANL-E since March, 1994 (Dunn 2001). Figure 4.1 shows the locations of wetlands at ANL-E.

local depression at this site that possibly contained a marshy area, although no streams or drainages at the site are evident on these maps. The wetland area currently present on the site covers about 3.2 acres (1.3 ha) (Van Lonkhuyzen et al. 1999).

The wetland at the proposed mitigation site is dominated by common cattail, narrow-leaf cattail, river bulrush, soft-stem bulrush, spikerush, rice cut grass, and reed canary grass. Several stands of common reed are also present. Much of the upland areas at the mitigation site consist of old-field habitat. An oak forest occurs along the eastern border of the site, while several stands of open woodlands dominated by box elder occur at the northern, northwestern, and southwestern portions of the site (Figure 3.1). A large wetland covering about 7.5 acres (3.1 ha) is located about 200 ft (61 m) downstream of the mitigation site. This wetland supports marsh communities, composed primarily of common reed, narrow-leaved cattail, and common cattail, as well as open water.

Aquatic habitats on the ANL-E site include streams (Sawmill Creek, Freund Brook, and associated tributary drainages), ditches, beaver ponds, and artificial ponds. ANL-E occurs within the Des Plaines River drainage basin. Fish species that have been observed at ANL-E include goldfish, creek chub, golden shiner, stoneroller, black bullhead, bluegill, green sunfish, orange-spotted sunfish, largemouth bass, and black crappie. Aquatic invertebrates include dipteran larvae (e.g., blackflies, midges, mosquitoes), caddisflies, dragonflies, and crayfish.

The existing wetlands on the mitigation site lie within the 100-year floodplain of Freund Brook (FEMA 1982). The floodplain extends upstream, west of Kearney Road, and downstream to the northeast.

### 4.4.3 Threatened and Endangered Species

The geographic range of several Federally listed animal species include northern Illinois, but no Federally listed threatened or endangered species are known to occur at ANL-E (Tuggle 1996). Two Federally listed species have been reported from the nearby Waterfall Glen Forest Preserve. The Hine's emerald dragonfly (*Somatochlora hineana*), Federally listed as endangered, occurs in locations with calcareous seeps and wetlands along the Des Plaines River floodplain, located about 0.6 mi (1 km) south of ANL-E. A probable breeding area for the dragonfly occurs about 0.6 mi (1 km) south of the western portion of ANL-E. Habitat suitable for the dragonfly does not occur at ANL-E (DOE 1997).

The leafy prairie clover (*Dalea foliosa*), Federally listed as endangered, occurs in dolomite prairie remnants in the Des Plaines River valley. Two planted populations of this species occur in the Waterfall Glen Forest Preserve.

An unconfirmed capture of the Indiana bat (*Myotis sodalis*), Federally listed as endangered, in Waterfall Glen Forest Preserve indicates that the bat may occur in the ANL-E

21 sites have yet to be formally evaluated. A Cultural Resources Management Plan is being developed that will provide a published overview of the prehistoric and historic context of the ANL-E facility.

Eleven sites are located near identified wetland areas (Figure 4.1 and Table 4.1). Of those, two sites are eligible for listing on the NRHP, two sites are not eligible, and seven sites have not yet been evaluated for significance. The sites not yet evaluated are treated as if they were eligible until official determinations are made by the DOE in consultation with the Illinois Historic Preservation Officer (SHPO).

The two sites that are eligible for listing on the NRHP, 11Du201 and 11Du203, are located in the vicinity of the mitigation site. Site 11Du201 is a 19th-century farmstead that was determined to be historically significant after being test-excavated in 1987 (Walitschek et al. 1988; Wescott 2000a). Prehistoric-period artifacts were also found on the site. Site 11Du203 is a prehistoric site that was test-excavated in 1987 and 1988 and was found to contain important undisturbed archeological deposits dating to the Middle Archaic Period (Wescott 2000b).

The six unevaluated sites listed in Table 4.1 (sites 11Du190, 11Du191, 11Du194, 11Du202, 11Du277, and 11Du287) include four near or in the Ecology Plot area west of Kearney Road in the southwestern corner of ANL-E and one each in the central area of the site and near the proposed wetland mitigation area. Most of these sites are prehistoric lithic scatters; the two historic sites are 19th-century farmsteads. Additional archaeological testing of these sites is required to assess their significance.

The DOE has determined that sites 11Du189, 11Du207, and 11Du208 are not eligible for listing on the NRHP.

**TABLE 4.1 Eligibility Status of 11 Archaeological Sites near Wetland Areas at ANL-E**

| Site No. | Site Type | Eligibility Status | General Location |
|---|---|---|---|
| 11Du189 | Prehistoric | Not Eligible | Southwest |
| 11Du190 | Historic | Unevaluated | Southwest |
| 11Du191 | Prehistoric | Unevaluated | Southwest |
| 11Du194 | Prehistoric | Unevaluated | Central |
| 11Du201 | Historic/Prehistoric | Eligible | Mitigation Site |
| 11Du202 | Historic | Unevaluated | Mitigation Site |
| 11Du203 | Prehistoric | Eligible | Mitigation Site |
| 11Du207 | Prehistoric | Not Eligible | Mitigation Site |
| 11Du208 | Prehistoric | Not Eligible | Mitigation Site |
| 11Du277 | Prehistoric | Unevaluated | Southeast |
| 11Du287 | Prehistoric | Unevaluated | Southwest |

# 5 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

## 5.1 EFFECTS OF THE PROPOSED ACTION

### 5.1.1 Water Resources

As previously discussed, agricultural drainage tiles are present in the mitigation site (Figure 3.1). These tiles drain an area of about 75 acres (30 ha). As a preferred alternative, the drainage tiles would be disabled, and the water table would be allowed to rise, saturating the existing soil. If the drain tiles are functioning properly, disabling them would raise the level of the water table to pre-drain elevations, and possibly create additional ponded water after rainfall. The higher water table levels would increase the size of the wetland. Because the source of the water for this restoration activity would be precipitation, water quality within the expanded wetland would either remain the same or improve with time. Deterioration of the existing water quality is unlikely.

The anticipated increase in wetland size would not be as large, and the location of the existing wetland might shift to the south and west, if the drain tiles are not functioning properly. Because the mitigation site lies east of Kearney Road, which is banked and has a toe elevation that is about 8 ft (2 m) higher than existing standing water in the wetland, impacts of additional ponded water would not extend west of Kearney Road.

Disablement of drainage tiles that might be present west of Kearney Road could create a small wetland in the southwestern portion of the 75-acre (30-ha) mitigation site watershed in addition to the up to 6.8-acre increased wetland area east of Kearney Road. A culvert beneath Kearney Road would preclude ponding of water. The formation of additional wetland to the north is unlikely because of the steeper terrain and presence of a second culvert beneath Kearney Road.

The disablement of the drainage tiles is expected to increase the size of the existing wetland in the mitigation site. The magnitude of the increase is difficult to predict because the geometry of the drain system, its extent, and its condition are not known. Assuming that the original wetland covered most of the flat ground within the site, an increase of about 6.8 acres (2.8 ha) is anticipated if the drains are still functioning properly (Tomasko 2000). The time required to produce this change is uncertain and depends on the following factors: the geometry and condition of the drain system; soil properties; local precipitation, transpiration, and runoff; and the recharge rate of the surficial groundwater. The time for the groundwater level to return to pre-drain conditions is estimated to be between 0.1 and 1.4 years for recharge rates of 31.5 and 3.2 in./yr (80.0 cm/yr and 8.1 cm/yr), respectively (Tomasko 2000).

that are not flooded and Rodeo® for species in open water). Glyphosate does not pose a hazard to aquatic invertebrates (Gardner and Grue 1996). Its effects on mammals, birds, and fish are minimal, posing no adverse effects to the environment at normal application rates (EPA 1993) and showing no bioaccumulation in the foodchain (Smith and Oehme 1992). However, because it is a broad-spectrum herbicide, glyphosate may pose a risk to nontarget vegetation (Gardner and Grue 1996). Impacts would be minimized by hand application of herbicide or by applying herbicide under conditions that reduce drift to nontarget areas.

Following invasive species eradication treatments, colonization rates of other marsh plants would be expected to be rapid, and in most cases species diversity would markedly increase. However, re-invasion of non-native species such as common reed frequently occurs at many sites in the absence of repeated treatments (Meyerson et al. 2000). Therefore, methods discussed in Section 3.1 could require repetition.

Under the proposed action, the total area of wetlands on the ANL-E site would increase primarily because a historically occurring wetland on the site would be restored. The identification and delineation of all wetlands on the ANL-E site would aid in this effort because the DOE would be able to avoid impacts to wetlands while carrying out its research mission. The mitigation wetland could be as large as 10.0 acres (4.0 ha), which includes the 3.2 acres (1.3 ha) of existing wetland, for a net gain of about 6.8 acres (2.8 ha) (see Van Lonkhuyzen et al. 1999). A very small wetland may also develop west of Kearney Road, southwest of the mitigation site (see Section 5.1.1).

Impacts to terrestrial biota would result from soil and sediment disturbance for in-place destruction of the agricultural drainage tiles and from the subsequent expansion of the mitigation site wetland. Terrestrial habitats affected would occur along a linear distance of about 1,800 ft (549 m) and would be limited to a narrow width of about 3 ft (1 m) required to excavate the drainage tiles. The affected area consists primarily of old fields. In addition, a small area of open woodland habitat occurs in the vicinity of a portion of the drain tiles west of Kearney Road.

As a result of drainage tile excavation, overlying vegetation would be destroyed or injured, and soil would be compacted by the backhoe's tires. This action would also result in the displacement (and in some cases mortality) of wildlife and temporary habitat loss. Habitat would be restored by planting of native vegetation immediately following tile disablement. Wildlife in the immediate area could be disturbed by noise, causing short-distance movements or other disruption of their activities. However, because of the temporary and localized nature of the disturbance, potential wildlife impacts would be negligible. The proposed action would not be expected to threaten the local population of any wildlife species or eliminate rare or naturally occurring native communities. All areas would be restored immediately following tile disablement.

The terrestrial habitats currently present on the site, which are dominated by invasive, non-native species, would be replaced by a diverse community of native wetland species that would provide suitable habitat for wetland-dependent wildlife.

potentially suitable for use by the Indiana bat would be removed. Enlargement and enhancement of the site wetlands could increase habitat suitable for a number of the state-listed species (e.g., pied-billed grebe, black-crowned night heron, Blanding's turtle, and Kirtland's snake). Prescribed burns would not adversely impact any Kirtland's snakes present on the site. Dormant snakes hibernate underground and would not be injured by controlled burns; active snakes would move to adjacent areas during burns.

### 5.1.3 Cultural Resources

#### 5.1.3.1 Archaeological Sites

Wetland mitigation could affect eligible and unevaluated archaeological sites due to inundation from increases in wetland acreage; ground-disturbing activities associated with the removal of the agricultural drain tiles and the planting or removal of various plant species; and conducting prescribed burns, which might damage surface artifacts.

Two archaeological sites that are eligible for listing on the NRHP (11DU201 and 11DU203) are near the proposed mitigation area. The DOE assessed the area of potential impact and determined that neither of these sites would likely be affected because they are located above the maximum elevation for the restored wetland (730 ft [223 m] MSL) and would only have less than a 1% chance of being inundated (on the basis of floodplain elevations [FEMA 1982]). In addition, ground-disturbing activities near those sites would be avoided. However, since site 11DU201 is adjacent to the proposed mitigation site and only 2 ft (0.6 m) above the proposed maximum wetland elevation, this site would be monitored every spring and during unusually wet periods. If monitoring indicated the site was at risk of becoming inundated, the DOE would immediately contact the Illinois SHPO and provide a mitigation plan for review and concurrence.

Two sites that have not previously been evaluated for eligibility for inclusion on the NRHP are also near the proposed mitigation site (11DU202 and 11DU207). The DOE delineated the boundary of site 11DU202 and determined that this site is outside the area of impact for the mitigation and would not be affected. However, site 11DU207 would likely be affected by the proposed mitigation. The DOE evaluated that site as part of this NEPA review and determined that it is not eligible for listing on the NRHP. The Illinois SHPO concurred that the site is not eligible (Haaker 2001); therefore, there would be no adverse impact to this site.

Five unevaluated sites (11DU190, 11DU191, 11DU194, 11DU277 and 11DU287) are near other wetlands at Argonne. Future wetland management activities, such as planting, plant removal, or prescribed burns, could affect surface artifacts at these sites. The DOE would evaluate potential impacts before undertaking such activities near these sites and would consult with the Illinois SHPO as necessary. The DOE would also complete additional NEPA review as necessary.

per hour for construction and $2 \times 10^{-5}$ cases per hour for landscaping, no cases of nonfatal occupational injury and illness involving lost workdays are expected for the proposed action. The rates used for occupational fatalities, injuries, and illnesses are based on 1999 statistics, the latest year for which results are available.

#### 5.1.4.2 Natural Hazards

Effects of natural hazards, such as tornadoes or high winds, would not be exacerbated by implementation of the proposed action. The proposed action does not include the excavation, mobilization, or storage of contaminated soil or hazardous materials, nor are any structures being renovated. Herbicide application, prescribed burning, and drainage tile removal would not be conducted during high winds or other hazardous weather conditions. Catastrophic or out-of-control fires would be unlikely because fires would be controlled by fire breaks in vegetated areas, the presence of roads and mowed areas around burn areas, and immediate availability of the ANL-E fire department.

### 5.1.5 Other Areas of Impact

Implementation of the proposed action is expected to result in negligible impacts relative to land use, aesthetics, noise, soils, air resources, transportation, human health, waste management, and environmental justice. Therefore, these topics are discussed only briefly in the following sections.

#### 5.1.5.1 Land Use

Land use on the ANL-E site would not change as a result of the activities associated with the proposed action. The mitigation site is classified as open space and environmentally sensitive and is not dedicated for other future uses. Areas designated for programmatic mission or support services would remain designated for those uses. Land use beyond the ANL-E site would not be affected by implementation of the proposed action.

#### 5.1.5.2 Aesthetics

Aesthetics would improve as a result of the elimination of invasive species populations and their replacement with native plants. An increase in the diversity of species within wetlands on the ANL-E site would also have a beneficial impact to the overall appearance of the site. Wetland and adjacent upland areas may appear disturbed following prescribed burning or

#### 5.1.5.6 Transportation

Negligible impacts to transportation may result from the occasional addition of a small number of contractor vehicles to ANL-E on-site traffic (approximately three to five vehicles for up to 50 work days per year). Traffic flow would not be expected to change from implementation of the proposed action.

#### 5.1.5.7 Human Health

The only environmental medium that could have the potential for impacts to human health is air quality, but effects on air quality would be negligible, as discussed in Section 5.1.5.5.

#### 5.1.5.8 Waste Management

No waste would be generated by the proposed action. All drainage tiles would remain in place following destruction.

#### 5.1.5.9 Environmental Justice

No environmental impacts would occur beyond the ANL-E site. Therefore, no minority or low-income group would receive disproportionately high adverse effects as a result of implementation of the proposed action.

## 5.2 EFFECTS OF THE SURFACE WATER IMPOUNDMENT SUBALTERNATIVE

### 5.2.1 Water Resources

The control structure that would be constructed under the surface water impoundment subalternative would create saturated conditions in the soil up to an elevation of 730 ft (223 m). The total area of the new wetland would be about 10 acres (4.0 ha); an increase of 6.8 acres (2.8 ha) to the 3.2 acres (1.3 ha) of the current wetland. The size of the new wetland would be the same as the maximum area predicted for the wetland created by removing the drain tiles. Impacts from impounded water created by the control structure would not extend west of Kearney Road because the 730-ft (223-m) contour is about 4 ft (1 m) lower than the elevation of the toe of the road embankment.

During the portion of the year that water levels on the mitigation site would be low (later part of the growing season), flood capacity within the mitigation site would be little changed, although flows through the water control structure might be slightly restricted. This operating mode would result in slightly higher flood elevations for brief periods. This elevation increase would not adversely impact ecological resources or nearby buildings or roads. However, for brief periods during the portion of the year that water levels would be high due to maximum flow restrictions (early part of the growing season), flood elevations could be correspondingly higher (up to 3 ft [0.9 m] higher) than they would be without the water-control structure. This elevation increase also would not adversely impact ecological resources or nearby buildings or roads.

### 5.2.3 Cultural Resources

Potential impacts to cultural resources from implementing the surface water impoundment subalternative would be expected to be similar to those from the proposed action. No unevaluated archaeological sites or sites eligible for listing in the NRHP would be located in the immediate vicinity of the water control structure. The maximum inundation of the mitigation site under this subalternative would not be expected to reach archaeological sites in the vicinity.

### 5.2.4 Worker Accidents

The potential for worker accidents from implementation of this subalternative would be similar to that under the proposed action (see Section 5.1.4.1). No fatal accidents would be expected to occur, on the basis of approximately 40 hours of effort required to construct the water control structure, and an occurrence rate for fatalities of about $7 \times 10^{-8}$ fatalities per hour for construction-related activities (BLS 2000a). No nonfatal occupational injuries and illnesses are estimated for implementation of the subalternative, based on a rate of nonfatal occupational injuries and illnesses of about $4 \times 10^{-5}$ cases per hour for heavy construction, excluding highway construction (BLS 2000b). On the basis of a rate of nonfatal occupational injuries and illnesses with lost workdays of about $2 \times 10^{-5}$ cases per hour for construction, no cases of nonfatal occupational injury and illness involving lost workdays are expected for the subalternative. The rates used for occupational fatalities, injuries, and illnesses are based on 1999 statistics, the latest year for which results are available.

### 5.2.5 Other Areas of Impact

Impacts resulting from implementation of the surface water impoundment subalternative would not differ from those identified under the proposed action relative to natural hazards, land use, aesthetics, noise, soils, air resources, transportation, human health, waste management, and environmental justice.

## 5.4 CUMULATIVE IMPACTS OF THE PROPOSED ACTION

Cumulative impacts are impacts on the environment that result from the incremental impact of a proposed action when added to impacts of other past, present, and reasonably foreseeable future actions, regardless of who undertakes such other actions (40 CFR 1508.7). Lands surrounding ANL-E and the Waterfall Glen Forest Preserve have experienced rapid development (residential dwellings, office space, retail businesses, and highways). This development, coupled with past alterations for agricultural purposes, has caused a loss or degradation of wetlands, which increases the importance of the wetlands present at ANL-E and Waterfall Glen Forest Preserve (Van Lonkhuyzen and LaGory 1994). Wetland area in DuPage County has decreased from over 60% of the total land area in the county prior to 1830 (prior to settlement) to approximately 12% in 2000. In addition to the over 45 acres (18 ha) of wetlands that currently occur at ANL-E, Waterfall Glen Forest Preserve contains about 260 acres (105 ha) of wetlands. Additional wetlands occur along the Des Plaines River to the south of the forest preserve and ANL-E (Van Lonkhuyzen and LaGory 1994).

Overall, enlargement of the wetland at the mitigation site would provide compensatory mitigation for past and potential future losses of wetlands that might occur from programmatic mission developments at ANL-E. Advance compensatory mitigation is useful for the relatively small, piecemeal losses of wetlands often caused by routine construction projects at ANL-E. Such small losses are individually minor but may cause substantial cumulative losses over time.

Management of other wetlands at ANL-E through controlling invasive species and establishing native species, coupled with the terrestrial habitat restoration efforts on the ANL-E site, would be expected to improve the productivity and conditions of large contiguous wetland and upland complexes at the site, with an accompanying increase in biodiversity throughout ANL-E.

Regional development has increased the rapid direction of precipitation toward local drainage systems, reducing the infiltration to groundwater. Replacement of non-native or artificial landscapes with native vegetation communities, such as under the ANL-E habitat restoration program, helps to reduce surface runoff and increase infiltration. Restoration of groundwater hydrology at the mitigation site would contribute to the improvement of groundwater levels in the ANL-E vicinity.

Minor atmospheric releases of particulate matter, volatile organic compounds, and pollutants in vehicle exhaust, under the proposed action, would be added to regional air contaminants. However, these releases would create a negligible increase in local air quality.

# 6 INDIVIDUALS AND AGENCIES CONSULTED

The following state and Federal agencies have been consulted concerning the proposed action:

- Illinois Historic Preservation Agency
- U.S. Fish and Wildlife Service

Pertinent letters of consultation are reproduced in Appendix A of this EA.

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# APPENDIX A:

# LETTERS OF CONSULTATION

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chicago Illinois Field Office
1250 South Grove Avenue, Suite 103
Barrington, Illinois 60010
847-381-2253 Fax 847-381-2285

IN REPLY REFER TO:

FWS/AES-CIFO

February 2, 2001

Robert C. Wunderlich
Department of Energy
Argonne Group
9800 South Cass Avenue
Argonne, Illinois 60439

Dear Mr. Wunderlich:

This responds to your letter dated January 18, 2001 requesting information on endangered or threatened species on or near the proposed wetland management plan located at Argonne National Laboratory.

We support the efforts to restore and manage wetland habitats at Argonne National Laboratory. Based on information gained through previous consultations concerning remediation efforts at Argonne, we do not believe implementation of the proposed wetland management plan would have any adverse affects to the federally endangered Hine's emerald dragonfly (*Somatochlora hineana)* that occurs at the adjacent Waterfall Glen Forest Preserve. This precludes the need for further consultation on this project in accordance with section 7 of the Endangered Species Act of 1973, as amended. Should project modifications or new information indicate that endangered or threatened species may be affected, then consultation with the Service should be initiated by the federal action agency.

We would appreciate the opportunity to review the more detailed wetland restoration and management plans when available.

If you have any questions, please contact Mr. Jeff Mengler at 847/381-2253, ext. 226.

Sincerely,

John D. Rogner
Field Supervisor

cc: ACOE, Karon Marzec

*NOTE: As of October 28, 2000 our address will be 1250 South Grove, Suite 103, Barrington, IL 60010. Our phone numbers and email addresses will remain unchanged. Please update your records accordingly.*

Two sites that had not been evaluated for eligibility are also near the proposed mitigation site (11DU202 and 11DU207). We delineated the boundary of site 11DU202 and determined that this site is outside the area of impact for the mitigation. Site 11DU207 would likely be impacted by the proposed mitigation. We evaluated this site and determined that it is not eligible for listing on the National Register. Our evaluation report for site 11DU207 is provided as enclosure 2.

Five unevaluated sites (11DU190, 11DU191, 11DU194, 11DU277, and 11DU287) are near other wetlands at Argonne. Future wetland management activities such as planting, plant removal, or prescribed burns could affect surface artifacts at these sites. We would evaluate potential impacts before undertaking such activities near these sites and consult with your office as necessary.

We are preparing an Environmental Assessment (EA) for our proposed wetlands management plan at Argonne; we expect to send you a copy the draft EA for review within the next few months.

If you have any questions, you may call Donna Green at (630) 252-2264.

Sincerely,

ORIGINAL SIGNED BY
A. CREIG ZOOK

Robert C. Wunderlich
Area Manager

Enclosures:
As Stated

bc: W. White, STS, w/o encls.
M. Kamiya, ANL/ESH, 331, w/o encls.
R. Van Lonkhuyzen, ANL/EAD, 900, w/o encls.
K. Wescott, ANL/EAD, 900, w/o encls.
R. Hrabak, ANL/PFS, 214, w/encl. 2 only

File: 5400.2 ~~(2.0)~~ 2.1

# APPENDIX B:

# COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT

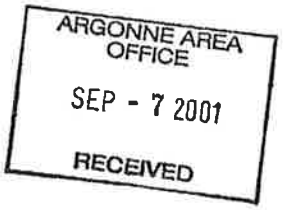
United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chicago Illinois Field Office
1250 South Grove, Suite 103
Barrington, Illinois 60010
847-381-2253 Fax 847-381-2285

IN REPLY REFER TO

FWS/AES-CIFO

September 4, 2001




Mr. Robert C. Wunderlich
U.S. Department of Energy
Argonne Area Office
9800 South Cass Avenue
Argonne, Illinois 60439

Attention: Donna Green

Dear Mr. Wunderlich:

This responds to your letter dated August 1, 2001 seeking our comments on your draft Environmental Assessment for proposed wetlands management on the Argonne National Laboratory-East Site.

We have reviewed your EA for proposed management of existing wetlands on the Argonne site and for proactive compensatory mitigation. We commend Argonne for the proposed plan to actively manage the wetlands on site in accordance with the basic principles of ecological restoration and the Chicago Wilderness Biodiversity Recovery Plan. We also support the restoration of new wetland areas for mitigation in advance of impacts. Any areas restored for mitigation credit to offset impacts authorized under the Clean Water Act should meet all of the performance standards currently adopted by the Chicago District, U.S. Army Corps of Engineers, not just the floristic quality parameter as suggested in the EA. We also suggest that the prescribed burn frequency should be determined by the fuel load and invasive species present, and should perhaps be more frequent than indicated in the EA until invasive species are controlled.

Based on the information provided in the EA and a review of our records, we concur that the project is not likely to adversely affect any federally listed threatened or endangered species or adversely modify designated critical habitat. This precludes the need for consultation in accordance with section 7 of the Endangered Species Act of 1973, as amended. Should project modifications or new information indicate that endangered or threatened species may be affected, consultation with the Service should be initiated.

Illinois
Department of
Natural Resources

http://dnr.state.il.us

524 South Second Street, Springfield, Illinois 62701-1787

George H. Ryan, Governor • Brent Manning, Director

September 4, 2001

Michael J. Flannigan
Director
Safety and Technical Services
U.S. Department of Energy
9800 S. Cass Avenue
Argonne, Illinois 60439

Re: U.S. Department of Energy
Argonne National Laboratory-East Site
Environmental Assessment for Proposed Wetlands Management
DOE/EA-1387
DuPage County, Illinois

Dear Mr. Flannigan:

The Illinois Department of Natural Resources has received and reviewed the project referenced above in accordance with the Illinois Endangered Species Act [520 ILCS 10/11], the Natural Areas Preservation Act [525 ILCS 30/17 and the Illinois Wetland Policy Act of 1989 [20 ILCS 830]. Based on said review, please not the following comments:

- The Department concurs with the Department of Energy's Proposed Action Alternative (Section 3.1), believes the project will provide a viable wetland/wildlife habitat area and meets the intent of the Illinois Wetland Policy Act of 1989 (IWPA). Based on the information provided in the EA, the Department cannot determine if the project is IWPA jurisdictional because the funding source is not identified. Please notify the Department if any State funds are being use for this project.

- The Blandings turtle *Emydoidea blandingii,* a State threatened species, is known to occur in DuPage County. The turtle inhabits wet prairie and wetlands and it is our opinion this project will enhance habitat for this species. This species should be referenced in Section 4.4.3 of the EA.

**Forest Preserve District of DuPage County**

3 S. 580 Naperville Road • Wheaton, IL 60187-8761 • 630.933.7200 • Fax 630.933.7204 • TTY 800.526.0857

Sent Via Fax 252-2361



August 16, 2001

Mr. Robert C. Wunderlich
Department of Energy
Argonne Area Office
9800 South Cass Avenue
Argonne, IL 60439

SUBJ: Review of Draft Environmental Assessment

Dear Mr. Wunderlich:

The Forest Preserve District would like to thank you for the opportunity to review your agency's environmental assessment for the proposed wetlands management on the Argonne National Laboratory - East Site. Our staff has no comments to make regarding this matter.

Sincerely,

R. Dan Gooch
Executive Director

CC: Mike Palazzetti

RDG:feo

# APPENDIX C:

# COMMENT RESOLUTION SUMMARY

# APPENDIX C:

## COMMENT RESOLUTION SUMMARY

The U.S. Department of Energy (DOE) revised the *Environmental Assessment for Proposed Wetlands Management on the Argonne National Laboratory-East* Site (EA) in response to comments from the U.S. Fish and Wildlife Service (USFWS) and the Illinois Department of Natural Resources (IDNR), as indicated below.

***Comment:*** The USFWS noted that mitigation credit to offset impacts authorized under the Clean Water Act should meet all of the performance standards currently adopted by the Chicago District, U.S. Army Corps of Engineers (COE), not just the floristic quality parameter as suggested in the EA.

***Resolution:*** DOE revised a sentence in Section 3.1 of the EA to clarify that: "Restored wetland acreage would be suitable for use as compensatory mitigation for impacts to wetlands regulated under the Clean Water Act when the mean index of conservatism reaches 3.5 and when the DOE and COE determine that the mitigated wetland is acceptable."

***Comment:*** The USFWS suggested that the prescribed burns should perhaps be conducted more frequently than indicated in the EA until invasive species are controlled.

***Resolution:*** Section 3.1 indicated that: "Prescribed burns would be conducted in upland and wetland communities at 4- to 5-year intervals, beginning with the third year after planting." DOE revised this sentence to say that burns would be conducted at 2- to 5-year intervals.

***Comment:*** The IDNR pointed out that the Blanding's turtle, *Emydoidea blandingii*, a state-threatened species, is known to occur in DuPage County. IDNR noted that this turtle inhabits wet prairie and wetlands and speculated that the proposed project would enhance habitat for this species.

***Resolution:*** DOE revised Section 4.3 to note that Blanding's turtle occurs in DuPage County and revised Section 5.1.2 to say that enlarging and enhancing site wetlands could increase habitat for Blanding's turtle.