U.S. Fish & Wildlife Service

# The Fairfield Marsh: A Conservation Partnership

*Final*

# Environmental Assessment

# United States Department of the Interior

**FISH AND WILDLIFE SERVICE**
**Bishop Henry Whipple Federal Building**
**1 Federal Drive**
**Fort Snelling, MN 55111-4056**


IN REPLY REFER TO:

FWS/NWRS-AP

APR 24 2001

Dear Reader:

The U.S. Fish and Wildlife Service (Service) is pleased to provide you with this Environmental Assessment (EA) entitled "The Fairfield Marsh - A Conservation Partnership." The EA evaluates four proposals for protecting and restoring fish and wildlife habitats in the historic Fairfield Marsh area of south-central Wisconsin. The EA also examines the consequences of "no action" by the Service.

Alternative E has been selected for implementation. The selected alternative outlines the Service's commitments toward a new community-based conservation effort in the Fairfield Marsh area. Alternative E was developed in response to a September 2000 report submitted by Farming And Conservation Together (FACT), a group consisting of landowners, elected officials, and representatives of conservation organizations seeking alternatives to a national wildlife refuge. The full text of the FACT report is presented in Appendix A.

Personal responsibility for natural resource conservation was an integral part of Aldo Leopold's land ethic philosophy. We want to support the initiative shown by local landowners to meld conservation, agricultural and community interests. The Service will only be one partner in any future conservation effort in the Fairfield Marsh region. It will take the long-term commitment of local organizations, the FACT committee, elected officials, all governments, and primarily the landowners themselves to make the concept of community-based habitat protection and restoration a reality.

Sincerely,

**William F. Hartwig**
**Regional Director**

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An Environmental Assessment (EA) has been prepared to identify and publicly disclose the possible environmental consequences of U.S. Fish and Wildlife Service (Service) involvement in the Fairfield Marsh Conservation Partnership. The EA evaluates the impact of the Service's actions in respect to the quality of the physical, biological, and human environment as required by the National Environmental Policy Act of 1969 (NEPA). The EA presented four action alternatives for the restoration and protection of wildlife, fish and plant habitats in the Fairfield Marsh area in South-central Wisconsin. The EA also evaluated the consequences of no action by the Service.

**Alternative Selection:** Alternative E, which outlines the Service's contributions toward a community-based conservation effort in the historic Fairfield Marsh area , is selected for implementation.

**Justification:** Preserving and restoring fish and wildlife habitats associated with the historic Fairfield Marsh will contribute positive resource benefits. The declining status of many grassland and wetland-dependent bird species throughout their range is evidence of the overall need for habitat restoration and protection. In Wisconsin, the loss of original, pre-settlement wetlands approaches 50 percent and 99 percent of the once-vast prairies and oak savannas have disappeared. The Fairfield Marsh Conservation Partnership, and the Service's contributions under Alternative E, would help to reverse this trend of habitat loss.

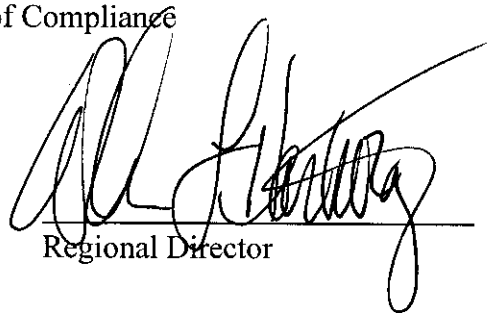
Alternative E does not include land purchases for a national wildlife refuge although the landowner option to sell lands for federal waterfowl production areas is included. Alternative E proposes partially funding a coordinator position for one year and encourages the county and township boards to protect the rural character of the lower Baraboo River watershed through local zoning. The Fairfield Marsh Conservation Partnership is a community-based effort that could eventually restore all or part of a drained wetland basin that historically contained wooded swamps, wet prairies, and associated grassland and forested uplands. In addition:

1. Acquisition of lands would be from willing sellers only.
2. Voluntary conservation measures and programs are a vital component of the project.
3. Net impacts to the regional economy will be minimal.
4. Cultural resources will be protected on acquired lands.
5. This action will not have an adverse impact on threatened or endangered species.
6. The project will not adversely impact drainage from neighboring lands.

**Finding:** Based on an evaluation of the information contained in the Environmental Assessment and supporting documents, the Service's contributions to the Fairfield Marsh Conservation Partnership under Alternative E is not a major federal action which would significantly affect the quality of the human environment within the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969.

**Supporting Documents:**

Environmental Assessment
Concept Management Plan
Statement of Compliance



Regional Director

4/24/01

Date

# Chapter 1 - Purpose and Need for Action

**Figure 1: Location of Study Area in South-central Wisconsin**

## I. Purpose

The Fairfield Marsh Conservation Partnership is intended as a means of preserving and restoring fish and wildlife habitats associated with the historic Fairfield Marsh of northeast Sauk County and northwest Columbia County, Wisconsin. The proposal could eventually restore all or part of a drained wetland basin containing wooded swamps, wet prairies and associated forested uplands through the voluntary involvement of private landowners. Restored grasslands would provide breeding habitat for a myriad of migratory birds including waterfowl. The proposal could also lead to the re-establishment of trout habitat in lower Leech Creek and enhance existing habitat in the upper reaches (Figure 2). The proposal is envisioned as a cooperative effort between numerous partners working toward a common conservation goal. Conservation efforts in the area would primarily depend on the voluntary efforts of landowners, local governments and communities.

This Environmental Assessment will accomplish three primary objectives. It will:

(1) Provide the public and agency decision makers with an analysis of the range of options to restore, enhance and protect wetlands and riparian corridors of the Baraboo River and Leech Creek and associated uplands in Columbia and Sauk counties in south-central Wisconsin;

(2) Publicly disclose the direct, indirect, and cumulative effects of each strategy on the quality of the human environment, as required by the National Environmental Policy Act of 1969 (P.L. 91-190), as amended); and

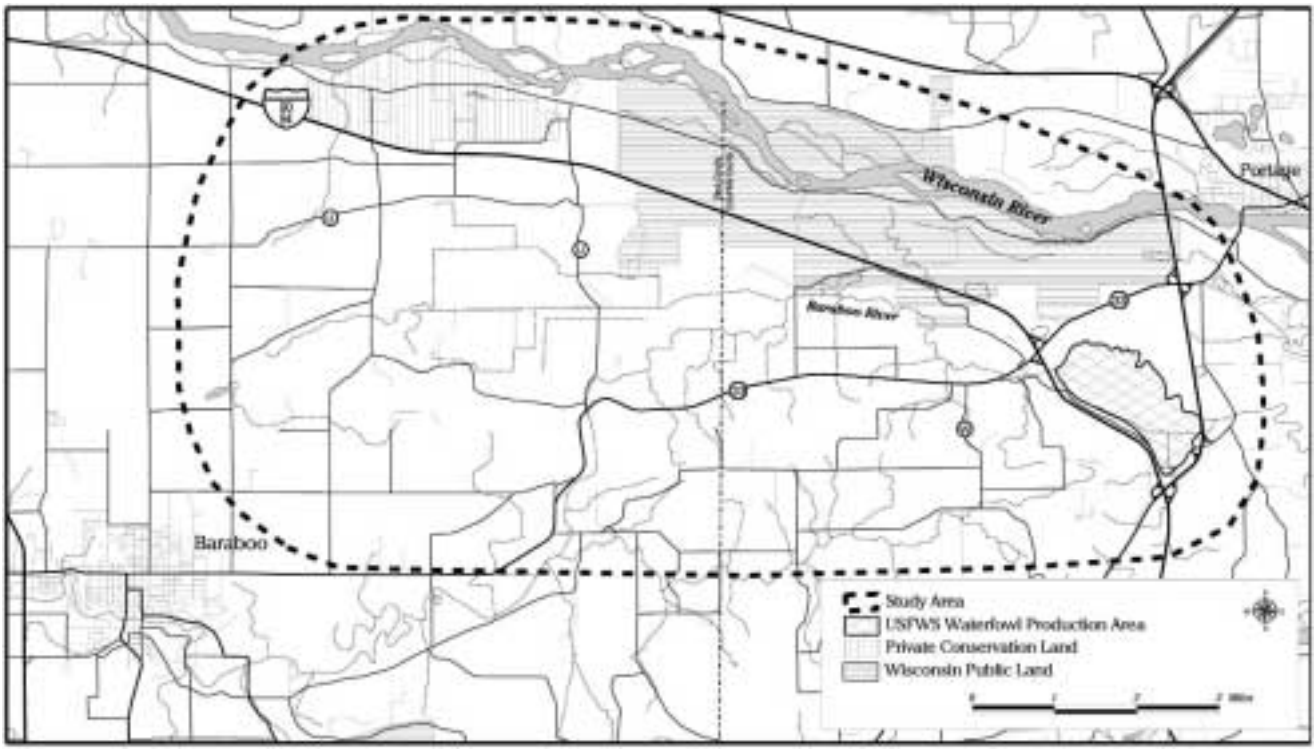
(3) Ensure continuing opportunities to incorporate recent scientific information into future resource plans and management practices.

## II. Need for Action

The need for wildlife habitat restoration and protection is evident by the declining status of multiple grassland and wetland-dependent bird species throughout their range. Numerous studies have demonstrated that habitat loss and degradation and changing agricultural practices are common factors in those declines. Extensive grasslands have all but disappeared in south-central Wisconsin. In addition, wetlands, both large and small, that are essential to wading birds, shorebirds and waterfowl continue to decline throughout the region.

The restoration of natural habitats needs to be accomplished in a manner that is accepted by local communities. The long-term success of any conservation effort requires a commitment from landowners, community organizations and environmental groups as well as local, state and federal governments.

**Figure 2: Fairfield Marsh Conservation Partnership Study Area**



# III. Background

## Grassland Birds

The original open prairies, oak savanna and forest meadows of south-central Wisconsin were once important habitats for grassland birds. However, the State of Wisconsin has lost 99 percent of its original, pre-settlement prairies and oak savannas. To varying degrees, grassland bird species have adapted and co-existed with agriculture for most of the past century. However, grassland bird populations are steadily declining in Wisconsin due to changes in agricultural practices, urban sprawl and other factors (WDNR 1997).

The Service and the Wisconsin Department of Natural Resources consider a number of these species, including the northern harrier, bobolink, eastern meadowlark and the grasshopper sparrow to be a high conservation priority. At a local level, annual Breeding Bird Survey transects in Sauk and Columbia counties from 1966-96 document a 5 to 22 percent decline in these grassland bird species (USGS 1999).

Farming practices have changed dramatically in the past 30 years. The wheat fields and dairy pasture lands of the past have given way to large-scale row crop farms. The loss of hay and pasture acreage is strongly correlated with declines in grassland bird populations throughout the Midwest.

Relatively few grassland-dependent birds use row crops (WDNR 1997). Only four of the 105 bird species that use Wisconsin's grasslands occur commonly or nest in row crops. An additional 12 bird species use row crops for a portion of their diet. The remaining 89 species rely solely on natural foods and the nesting habitats found within grasslands.

## Wetlands

Wisconsin has lost nearly 50 percent of its original, pre-settlement wetlands. Sauk County has lost about 95 percent and today only 1 percent of the present surface area of 536,128 acres consists of wetlands (Sauk County 1998). Prior to settlement, nearly 20 percent of the county consisted of wetlands. Wetlands have been drained for agricultural production and housing developments, they have been filled for highways, and some have been lost to altered watercourses and groundwater reductions. Today, we have a new understanding of the valuable role wetlands play in ecology. Wetlands provide a host of direct benefits to humans including acting as natural filters for pollution and reducing the extent of flooding. In addition to being key habitat for migratory birds, wetlands also serve as nurseries for a variety of fish species.

The wet meadow and open water habitats of the restored Fairfield Marsh would provide feeding and nesting areas for local waterfowl such as the mallard, blue-winged teal and gadwall. Wading birds, such as great blue herons and egrets, would gain sufficient areas to feed and rest. Shorebirds of all kinds would use the shallow water and open meadows.

### A Connection to the Conservation Legacy of Aldo Leopold

Aldo Leopold (1887-1948) is considered by many to be the father of modern wildlife ecology. He is best known for his book, *A Sand County Almanac*, and it's publication in 1949 is often acclaimed as one of the major milestones in conservation literature. Mr. Leopold was a scientist, a scholar, a philosopher as well as a gifted writer. He put his theories on the environment to work during the 1930's and 40's on a rundown farm on the Wisconsin River just north of the project area. Today, the famous Leopold "Shack" still stands less than a mile away from the study area.

## IV. Serving People and Conserving Wildlife: The U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service as we know it today has evolved slowly with changes in the country's use of natural resources and growing respect for the environment. Today the Service is the primary federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people.

*"Working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people."*
**Mission of the U.S. Fish and Wildlife Service**

Specific responsibilities include managing the National Wildlife Refuge System, enforcing federal wildlife laws, managing migratory bird populations, restoring nationally significant fisheries, administering the Endangered Species Act, and restoring wildlife habitat such as wetlands.

Three alternatives presented in this EA would involve the future establishment of a national wildlife refuge. The National Wildlife Refuge System is the world's largest and most diverse collection of lands set aside specifically for wildlife. The refuge system began in 1903 when President Theodore Roosevelt designated 3-acre Pelican Island, a pelican and heron rookery in Florida, as a national bird sanctuary.

Today, over 500 national wildlife refuges have been established from the Arctic Ocean to the South Pacific, from Maine to the Caribbean. Varying in size from half-acre parcels to thousands of square miles, they encompass more than 92 million acres of the Nation's best wildlife habitats. The vast majority of these lands are in Alaska, with the remainder spread across the rest of the United States and several U.S. territories.

National wildlife refuges offer the public a wide variety of wildlife-dependent recreational and educational opportunities. Many refuges have fishing and hunting programs, visitor centers, wildlife trails, and environmental education programs. Nationwide, some 34 million visitors annually hunt, fish, observe, and photograph wildlife or participate in interpretive activities on Service national wildlife refuges.

## V. Public Involvement

Involvement by local government officials, organizations, landowners and other interested citizens is integral to planning for any federal conservation proposal. Projects that involve land acquisition by a government agency are often controversial and the proposed Aldo Leopold National Wildlife Refuge has been no exception. Open communication with all parties is essential throughout the planning process. Starting in January 1999, the Service has provided information and sought public input about the proposed project through news releases, interviews, open house events, group presentations, letters/newsletters to landowners and one-on-one discussions.

### Background

A Preliminary Project Proposal for a refuge within the study area was developed by Service biologists in 1998. The purpose of this report was to brief the Director of the U.S. Fish and Wildlife Service about the resource conservation opportunities in the area and to obtain permission to conduct a study of the merits of the proposal. The proposal was approved by the Director on October 23, 1998.

Detailed planning began in January 1999 with informal meetings and discussions with local conservation groups, government officials and some resident landowners. Since January 1999, Service planning team members have placed or received more than 800 telephone calls, had 50 personal meetings with landowners and have given 20 group presentations related to the refuge proposal. In addition, open house events were held during two weeks in March 1999 in Portage and Baraboo, Wisconsin to introduce the refuge proposal. The events were well attended with approximately 50 people stopping by in Portage and 130 attending the event in Baraboo. People were encouraged to ask questions and fill out written comment forms.

In September 1999, a Draft Environmental Assessment (EA) was released for public review and open house events were again conducted within the project area. Following the release of the Draft EA, several local citizens and environmental groups asked for a delay on a final decision regarding establishment of a refuge until they could develop an alternative proposal. The group adopted the name Farming and Conservation Together (FACT). The Service agreed to the delay.

During January - September 2000, the FACT committee also contacted landowners and held public meetings and other events. The group was formulating an alternative to a refuge and sought local opinion and feelings about voluntary conservation measures. More information about the FACT committee and its proposal will be presented in Chapters 2 and 4 and in Appendix A.

In September 2000, the FACT committee submitted its proposal. The Service revised the Draft EA to include a fifth alternative that outlined the agency's contribution toward a new conservation approach. The Revised Draft EA was released in February 2001 and two open house events were subsequently held in Baraboo and Portage. The public comment period ended on April 2, 2001.

## Issues and Concerns

Issues and concerns identified during scoping helped the Service identify and evaluate strategies for the proposed action. Individual comments expressed during the open houses or received in writing have included the following themes:

*Natural Resource Issues*

- Restoration of Habitat
- Trout Fishery in Leech Creek
- Water Quality/Wetland Function

*Socioeconomic Issues*

- Impact on Taxes
- Impact on Land Values
- Economic Impact

*Local Land Use Issues*

- Preservation of Rural Character
- Additional Landowner Options for Land Conservation
- Drainage Conflicts and Drainage Districts
- Fire Suppression
- Landowner Rights
- Future of Hunting and Fishing
- Planning Process Issues
- Public Input/Review
- The EA Approval Process
- Condemnation (Eminent Domain)

These issues will be discussed as an integral part of the Alternatives and Environmental Consequences chapters in this EA. In addition, we have included a list of frequently asked questions, and the text of three letter responses to area landowners that address most of these issues (Appendix D).

## Public Comments

The Service has received dozens of letters, postcards and e-mail messages from people concerning the proposed refuge and possible conservation alternatives, including the FACT proposal. In addition, Service representatives were present at Fairfield Township and Caledonia Township meetings, as well as Sauk County and Columbia County government meetings where the project was discussed. It is not practical to print all correspondence or to recreate verbal discussions in this EA. However, the following quotes from the written correspondence provide a glimpse of the range of comments we received on the original refuge proposal.

> "*There are already plenty of cranes and other wildlife in the area without having a refuge. To have more would be a travesty to the surrounding farms.*"

> "*I think the highest use of a wetland is not farming. I would like to see the drainage ditches filled and the area put back as it was so the water quality would be improved and the bog restored. I would hope to see tamarack trees spread over the area again. I*

*am totally in favor of this project."*

*"Maybe if the farmers individually are ever forced to sell their land to survive, at that time the FWS could offer a competitive price to avoid urban (farmland) sprawl and offer a choice to landowners that would ensure hope for the future of our Earth and all life on it."*

*"Let's cancel this ill-advised project and let private property owners continue their good stewardship."*

*"You will hear very vocal resistance to this plan from a few people, but the vast majority of people in Sauk County and Columbia County would be in favor of this plan. Please do not succumb to the loud voices of those few as happened at (the proposed) Mirror Lake and Dells Creek expansion."*

*"What type of contribution will the Fish and Wildlife Service make to procuring equipment to fight fires which may arise either naturally or by accident or through the negligence of visitors to the Leopold Refuge?"*

*"We are concerned about the impact the refuge will have on regulating farms in terms of crop damage and loss, restrictions on use of pesticides and herbicides."*

*"I feel you should expand the proposed boundary, the area (8 to 9,000 ac.) is too small. This is the last chance to save this land from development."*

*"I think there's other lands that could better address Fish and Game's needs that don't step on the values of these people than the lands being looked at in this project. I feel enough land is already in "public lands" - all they need to do is properly manage what they have."*

*"It would probably be a worthless weed patch, and cost too much taxpayer's money."*

*"I believe that this is a chance to save something valuable for future generations that will never be possible if this land is cut up into 35 acre or smaller parcels with houses on them. I hope the refuge will become a reality."*

Thirty written comments regarding the Revised Draft EA were received during the February-April 2001 public review period. Nearly all expressed some level of support for the work of the FACT Committee and the Service's formulation and selection of Alternative E. In addition, several county and township boards sent resolutions in favor of the preferred alternative. Here are a few of the comments we received:

*"We believe this cooperative approach sets a new and positive course of direction - a road map of sorts - which other future projects could look to for guidance."*

*"It is commendable that the Service has acknowledged that, just as each conservation site is unique, so too are the needs and*

*wishes of local inhabitants."*

*"I favor Alternative E but I am disappointed in the dropping of the ecosystem education emphasis for the general public and especially youth groups."*

*"...the preferred alternative may not envision habitat restoration goals sufficient to address the needs of high-priority species in the area."*

*"We urge the FACT committee to be aware of the potential vulnerability of the agricultural lands and uplands to conversion to residential development which could undercut the success of the project as a whole."*

*"Alternative E meets the community's dual goals of preserving agriculture and protecting, preserving and restoring land for wildlife."*

## VI. Decision

In compliance with the National Environmental Policy Act, the Regional Director, Great Lakes-Big Rivers Region, has considered the information presented in this document and selected Alternative E for implementation. A copy of the Finding of No Significant Impact can be found at the beginning of this environmental assessment.

## VII. Legal Compliance

The Service planning process, land acquisition and management is done in accordance with authority delegated by Congress and as interpreted by Department of the Interior and agency regulations and guidelines. Land acquisition authority includes the Migratory Bird Conservation Act, Endangered Species Act, Emergency Wetlands Resources Act and the Fish and Wildlife Act. Land management authority, including comprehensive conservation planning, is directed primarily by the National Wildlife Refuge System Improvement Act of 1997. Additional relevant Acts and Executive Orders are listed in Appendix E.

# Chapter 2 - Description of Alternatives

This chapter describes the range of options (alternatives) to restore, enhance and protect wetlands, riparian corridors and associated uplands of the Baraboo River and Leech Creek. We will discuss how the alternatives were formulated, identify the preferred alternative and explain why some alternatives were eliminated from further study.

## I. Formulation of Alternatives

Each of the following alternatives was designed to benefit fish, wildlife and plant habitats within the study area. The boundaries were formulated based on the natural hydrography of the region, the habitat requirements of desired wildlife species and comments received from the public. The recommended protection levels (fee acquisition, conservation easement, landowner incentives etc.) were based on the Service's policy and the local communities' expressed interest to acquire the least interest in land necessary to meet habitat protection and restoration goals.

The action alternatives described in this EA aim to promulgate grassland, wetland and forest-dependent wildlife and plant species by increasing the quantity and quality of available habitats in the vicinity of the historic Fairfield Marsh. Three of the action alternatives discussed would result in the establishment of a new national wildlife refuge to meet these goals. However, this EA also examines a preferred alternative that may accomplish these goals without establishing a national wildlife refuge. The following are the original goals for the proposal:

- To preserve and restore a natural diversity and abundance of fish, wildlife and plants to the study area while complementing existing habitats on adjacent conservation areas and private lands.
- To conserve, enhance and restore habitats capable of supporting a diversity of migratory birds native to the area.
- To preserve, enhance, and, where feasible, restore all species of animals and plants native to the area that are endangered, or threatened with becoming endangered.
- To provide visitors with high quality wildlife-dependent recreational experiences to the extent these activities are compatible with resource conservation, restoration and enhancement purposes.
- To provide visitors with an understanding and appreciation of the natural world, and the human role in the environment, in the spirit of the writings and works of Aldo Leopold.

Alternatives A, C and D include the concept of a Voluntary Watershed Maintenance Zone, an idea that emerged in public comments received in the open houses as well as from local and regional resource specialists. A question commonly heard during the scoping process concerned how water quantity and quality in the upper watershed would affect the Service's proposal to restore the Fairfield Marsh and lower Leech Creek. Specifically, there was concern that forest clearing, development of residential subdivisions and other future land practices could create heavy nutrient or contaminant loads in Leech Creek or the lower Baraboo River.

Clean, clear water is essential for trout species and the invertebrates that trout feed on. Waterfowl broods and grassland birds also depend on aquatic insects as a food source. The ability of the restored marsh to absorb storm runoff would also be impaired by hydrologic changes in the adjacent Baraboo Hills streams and upper Leech Creek. The concept of a Voluntary Watershed Maintenance Zone seeks to ensure the long-term maintenance of water quality within the former Fairfield Marsh basin.

The Voluntary Watershed Maintenance Zone concept does not emphasize land acquisition. Instead, we would seek to draw attention to the future of the headwaters and the health of a restored marsh and creek. The approach would be to encourage landowners to voluntarily protect existing woodlands and pastures through conservation easements, or simply adopt land use practices that conserve soil and avoid excessive use of fertilizers and herbicides. A number of nonprofit organizations as well as county, federal and state government programs can provide technical assistance to landowners who want to promote conservation. The Service would acquire fee interest in lands outside of the Voluntary Acquisition Area only at the specific request of a landowner and only if funds were available.

The original proposal map displayed during the open houses and other events just outlined the Voluntary Acquisition Area. The planning team decided not to include an alternative solely for this area. The team felt strongly that the upper watershed of Leech Creek should be included in all alternatives as a critical component for the future restoration of Lower Leech Creek and the Fairfield Marsh.

The preferred alternative (Alternative E) was derived from the recommendations of a local community group known as Farming and Conservation Together (FACT). This proposal would include the purchase of Waterfowl Production Areas, conservation easements, development rights, cost-shared habitat restoration on private lands and voluntary conservation measures. The initial group that would become FACT formed in December 1999 as a result of landowner dissatisfaction with the refuge proposal. Group members suggested that an approach with more involvement by private landowners may be the preferred way to protect and restore the area. At the time, the Service was ready to make a final decision based on the Draft EA presented to the public in September 1999. However, the Regional Director agreed to temporarily suspend action on the first Draft EA to give the group time to formulate an alternative.

The FACT committee began holding regular meetings in February 2000. The voting members of the committee included four landowners and representatives from three local conservation organizations and four local governments. In late September 2000, the FACT committee submitted a report entitled "Proposal to

the U.S. Fish & Wildlife Service, Alternative to the Aldo Leopold National Wildlife Refuge." We will attempt to summarize the findings and recommendations of this report in the following pages. However, the entire FACT proposal, as submitted to the Service, is contained in Appendix A. The FACT Committee established five primary goals:

1. Preserve local leadership through an initiative designed to accomplish the FACT vision as an alternative to the proposed refuge;
2. Expand and coordinate the voluntary conservation and agriculture opportunities available to landowners;
3. Provide educational and research opportunities on the relationship between conservation and agriculture;
4. Reduce conflicts between people and wildlife for both current and future wildlife population levels; and
5. Protect private property rights.

The following is a brief description of the FACT committee's work and their written recommendations.

The work of the committee between February and September 2000 consisted of regularly scheduled meetings, the hiring of a coordinator, landowner contacts, presentations to local government boards and drafting a written proposal. The FACT committee assembled a list of existing government voluntary agricultural and conservation programs. A subcommittee of FACT also formed to examine the issue of existing crop depredations by wildlife in the project area. The FACT committee did not delineate a specific project area on a map. However, a map provided in the final proposal indicates that the area of interest roughly approximates the proposed Alternative C refuge boundary (Figure 3).

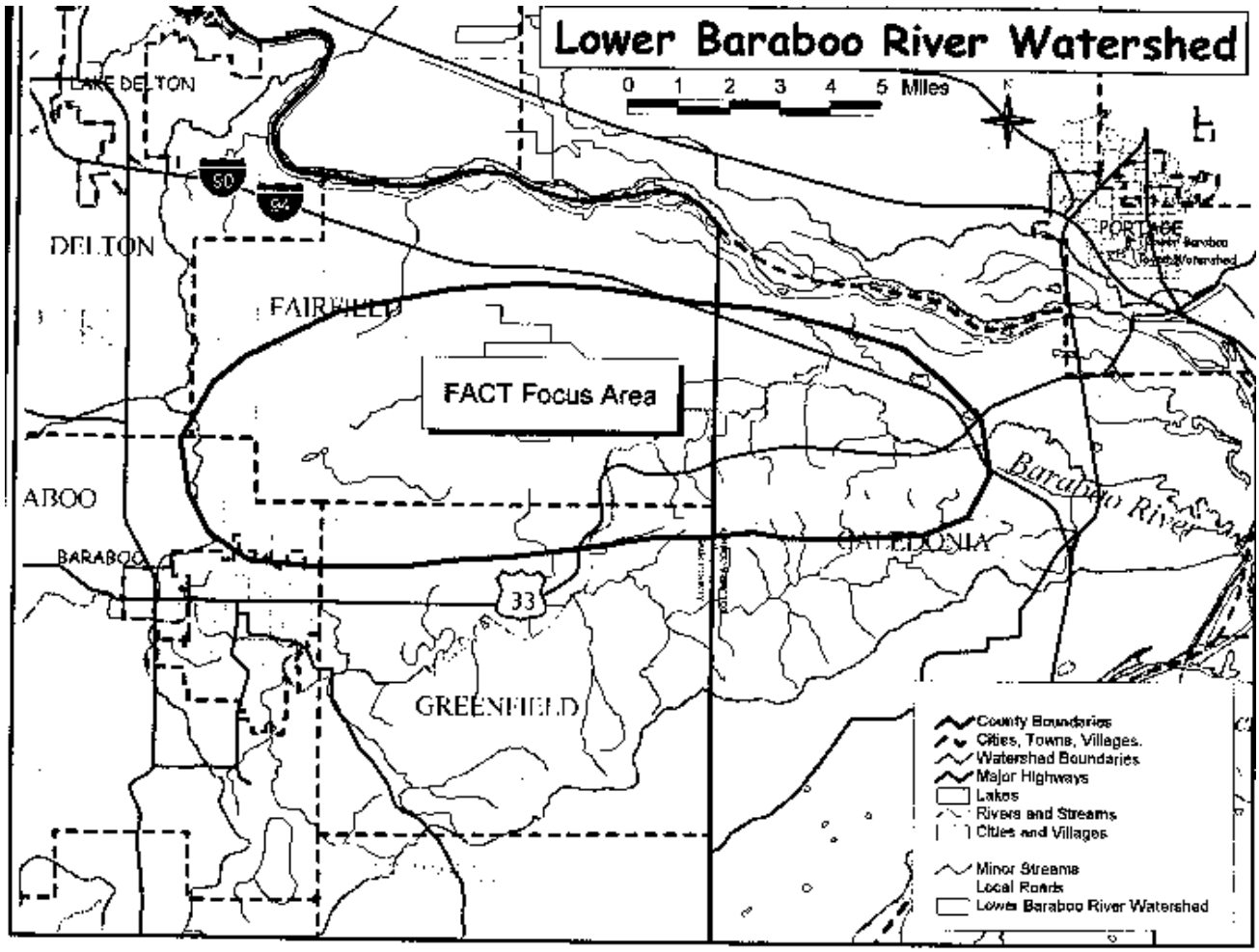
The FACT coordinator met with 68 landowners who collectively own more than 85 percent of the project area to identify current conservation activities as well as interest in future projects on their land. Forty-seven landowners expressed some level of interest in a conservation practice or program ranging from riparian buffer strips to a purchase of development rights. Landowners were not asked to identify specific land parcels or any interest in selling land.

The FACT proposal concluded with five suggested future responsibilities each for FACT and the Service:

<u>FACT Responsibilities</u>

1. Continues to meet as a committee, provides oversight on implementation of the proposal and serves as a forum for landowners' concerns.
2. Uses collective influence to secure private and public funding.
3. Maintains local participation and incorporates feedback.
4. Provides technical and informational assistance to landowners.
5. Supervises the FACT coordinator.

**Figure 3: FACT Project Boundary Recommendation (Map from September 2000 FACT Proposal)**



USFWS Responsiblities

1. Includes FACT alternative in the Environmental Assessment of the Aldo Leopold National Wildlife Refuge.
2. Selects the FACT proposal as the Preferred Alternative within the Environmental Assessment.
3. Continues funding for the Fact coordinator.
4. Assists FACT committee in securing public funding.
5. Continues involvement of USFWS staff where appropriate.

The Service planning team agrees that these are important and workable strategies. Alternative E includes more detail on individual roles and responsibilities. These details are necessary in order to make the FACT option comparable to the refuge alternatives.

## II. Alternatives Considered But Eliminated From Detailed Study

The following concepts were brought to our attention early in the planning process. The concepts were discussed by the planning team but, for a variety of reasons, the concepts were not considered to be viable alternatives that would meet the proposed goals of the Fairfield Marsh (Aldo Leopold NWR) project.

### Fairfield Marsh Restoration Solely Through the Wetland Reserve Program

The Preliminary Project Proposal (USFWS 1998) discussed the possibility of using the Wetland Reserve Program, administered by the U.S. Department of Agriculture through the Natural Resources Conservation Service (NRCS), to restore the former Fairfield Marsh. Under this program, all affected landowners need to agree to discontinue farming in the identified wetland basin and allow for a restored hydrology. In return, landowners are paid for the value of this wetland easement. Landowners retain ownership of the land and may keep or sell the property subject to a perpetual easement, or in some cases a 30-year easement.

Restoration of Leech Creek and the 5,100-acre Core Fairfield Marsh basin would be a large scale project. The NRCS generally requires that all affected landowners agree to program participation before initiating a wetland restoration. The landowners in the former Fairfield Marsh basin were approached in 1996 about their interest in the Wetland Reserve Program. Only one landowner expressed any interest in a project at that time. The Wetland Reserve Program could still be used as a tool to complement the Fairfield Marsh proposal. However, the program is not a viable alternative to a diverse conservation initiative due to the lack of landowner participation, the size of the core wetland basin, and the need to provide adjacent uplands for bird nesting habitat and watershed protection.

### Include the Entire North Range of the Baraboo Hills

During public scoping, a few individuals asked the Service to consider a much larger refuge boundary that would acknowledge the natural value of the Baraboo Hills region. They suggested a boundary that included the north range of the Baraboo Hills and a large section of forested land south of the study area. The primary goal of this conservation project is to restore wetland and grassland habitats to the former Fairfield Marsh basin. The majority of wetland and grassland-dependent bird and mammal species do not require large blocks of forest cover during their life cycle. The study area was limited to the watershed of Leech Creek and the lower Baraboo River for this reason.

In addition, several local governments and non-profit organizations, including The Nature Conservancy, have long recognized the unique values of the Baraboo Hills and have active land conservation programs or initiatives in the area. The Service supports these efforts and the positive impacts on forest dwelling songbirds and endangered plants and animals.

### Substitute Other Areas Outside of the Study Area for a Refuge (or Restoration) Proposal

A few individuals suggested that the Service consider pursuing the Badger Army Ordinance Plant property or other State (Pine Island Wildlife Management Area) or private (Leopold Memorial Reserve) properties instead of the proposed refuge. All three of these areas do not contain a large, restorable wetland basin such as the Fairfield Marsh, a major feature of the conservation proposal. In addition, the Pine Island WMA and Leopold Memorial Reserve are already managed for wildlife and would complement the new habitats proposed for the Fairfield Marsh basin.

## III. Explanation of Alternatives

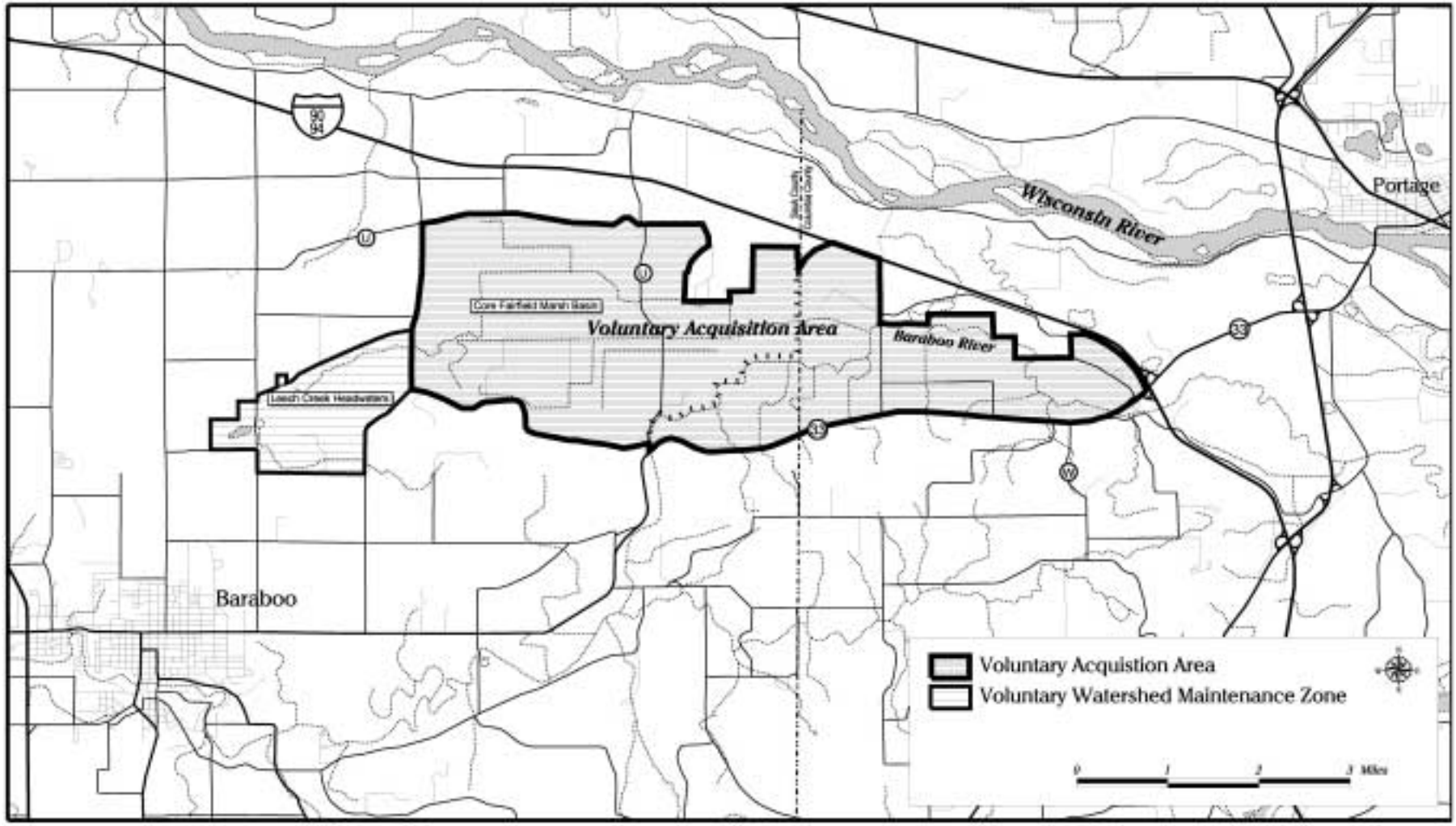
### Alternative A

*National Wildlife Refuge with a Voluntary Acquisition Area and Voluntary Watershed Maintenance Zone (Leech Creek Headwaters Only)*

This alternative includes a Voluntary Acquisition Area and Voluntary Watershed Maintenance Zone (Leech Creek Headwaters). Fee acquisition from willing sellers of the Core Fairfield Marsh Basin (5,109 acres) would be the focus of this alternative. The core basin is defined by the extent of muck soils and a limited amount of surrounding uplands. The Core Fairfield Marsh Basin would receive the highest priority for fee acquisition with future available funding (Figure 4).

The long-term goal for the remainder (3,386 acres) of the Voluntary Acquisition Area would be to purchase the land in fee or easement over the course of 20 years. However, during the interim, a combination of conservation easements, fee title or private conservation measures would be pursued based on each landowner's interest. The goal for the Leech Creek Headwaters (1,279 acres), as part of a Voluntary Watershed Maintenance Zone, would be to retain the existing land uses and encourage management practices that benefit the natural health of the Leech Creek drainage. The Wisconsin DNR holds riparian easements along 80 percent of Leech Creek. Therefore, the Service would pursue additional easements or fee title in this area as a low priority or in special cases. Land within this alternative totals 9,774 acres.

**Figure 4:** **Alternative A, National Wildlife Refuge with a Voluntary Purchase Area and Watershed Maintenance Zone (Leech Creek Headwaters Only)**



## Alternative B: No Action

No new conservation initiatives for the Fairfield Marsh area would be proposed by the Service under this alternative. No land or easements would be purchased for a national wildlife refuge in the area. However, land acquisition for waterfowl production areas could continue in the general vicinity depending on landowner participation. The Service would also continue to emphasize habitat restoration on private lands through the Partners for Fish and Wildlife program.

## Alternative C

*National Wildlife Refuge with a Voluntary Acquisition Area and Complete Voluntary Watershed Maintenance Zone*

This alternative involves a Voluntary Acquisition Area and Entire Voluntary Watershed Maintenance Zone. This alternative would promote watershed protection for the lower Baraboo River and the restored Fairfield Marsh. Under this scenario, the Voluntary Watershed Maintenance Zone would include three surrounding areas that drain into the Fairfield Marsh and Voluntary Acquisition Area (Figure 5). The Voluntary Watershed Maintenance Zone includes lands adjacent to I90/94 (1,040 acres), the north-facing bluff of the adjoining Baraboo Hills including a contiguous tract of forest west of the Lower Narrows and the Leech Creek Headwaters (4,457 acres). The Core Fairfield Marsh Basin would remain the highest priority for fee acquisition with future available funding. The goal for the Voluntary Acquisition Area would be to gradually acquire fee or easements on the lands over the course of 20 years. During the interim, a combination of conservation easements, fee title or private conservation measures would be pursued based on each landowner's interest.

The approach for the Leech Creek Headwaters, as part of the Voluntary Watershed Maintenance Zone would be to retain existing land uses and encourage conservation practices within the Leech Creek drainage. In addition, the approach for land conservation within the entire Voluntary Watershed Maintenance Zone would be similar; the Service would seek to engage landowners in private conservation measures through existing programs and technical assistance. However, fee title purchase would still be available for landowners interested only in that option. Land within this alternative totals 15,272 acres.

## Alternative D

*National Wildlife Refuge with a Voluntary Acquisition Area (Marsh Basin Only) and Voluntary Watershed Maintenance Zone (Leech Creek Headewaters Only)*

This alternative entails a Voluntary Acquisition Area (Core Fairfield Marsh Basin) and Voluntary Watershed Maintenance Zone (Leech Creek Headwaters). The Baraboo River and the Sauk/Columbia county line would become the eastern boundary of a refuge under this alternative (Figure 6). Alternative D would center on fee acquisition, from willing sellers, of the Core Fairfield Marsh Basin (5,109 acres). The Core Fairfield Marsh Basin would receive the highest priority for fee acquisition with future available funding. The goal for the Leech Creek Headwaters, as part of the Voluntary Watershed Maintenance Zone, would be to retain the existing land uses and encourage conservation practices within the Leech Creek drainage. Land within this alternative totals 6,388 acres.

**Figure 5:** **Alternative C, National Wildlife Refuge with a Voluntary Acquisition Area and Watershed Maintenance Zone**

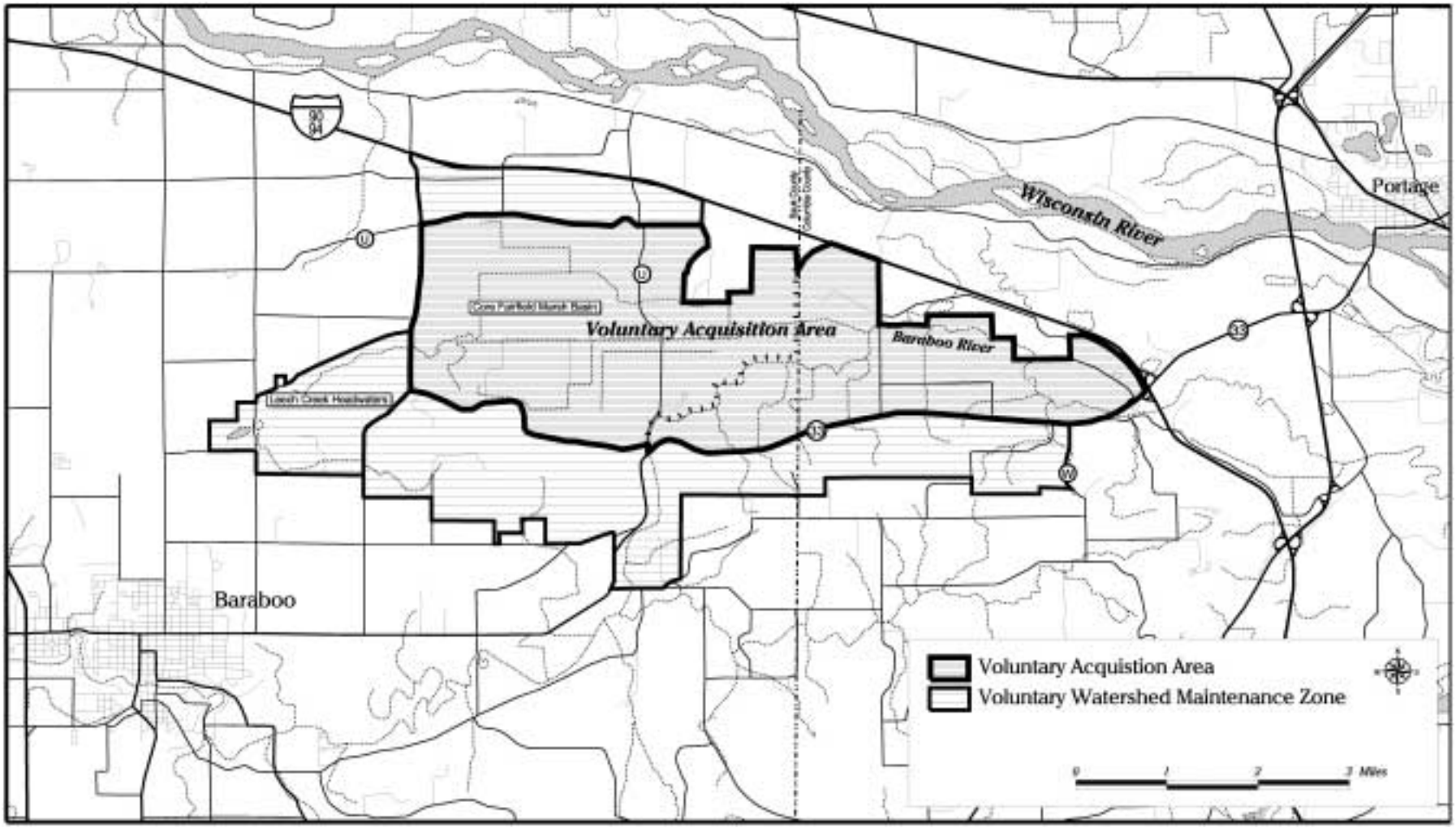
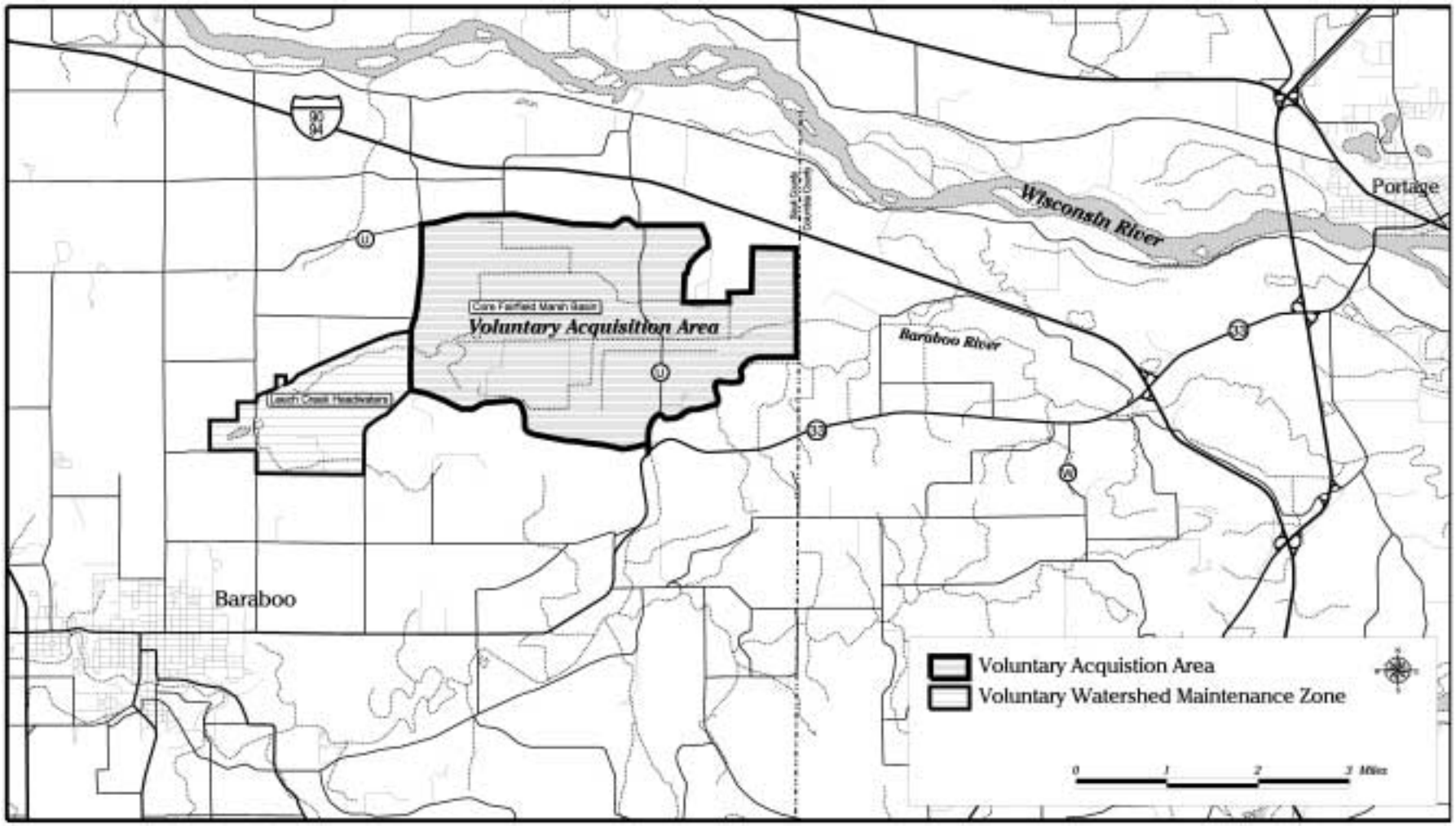


**Figure 6:** **Alternative D, National Wildlife Refuge with a Voluntary Acquisition Area (Core Marsh Basin) and Watershed Maintenance Zone (Leech Creek Headwaters)**



## Alternative E (Preferred)

*Fairfield Marsh Conservation Partnership (Preferred Alternative)*

This Service and private landowner partnership alternative would encourage a cooperative effort between landowners, local communities, and governments to protect and restore the watershed of the lower Baraboo River through means other than establishment of a national wildlife refuge. Under Alternative E, the restoration and management of fish and wildlife habitat within the former Fairfield Marsh remains the priority of the Service. However, a greater responsibility for accomplishing conservation goals will reside with private landowners and voluntary practices. Figure 2 represents the general area of interest covered by this alternative.

Alternative E Action Items

The Service, FACT and local communities should seek to contribute the following:

1. Request Governor's approval to expand the Service's Waterfowl Production Area (WPA) authority into Sauk County. The Migratory Bird Conservation Act of 1934, otherwise known as the Duck Stamp Act, requires State approval for the expenditure of Duck Stamp revenue. The State has already granted this approval for Columbia County. The expanded authority would enable the Service to seek funds to acquire lands from willing landowners for the establishment of WPA's in both Columbia and Sauk counties.

2. Consider creating a WPA that is larger than the current agency practice consistent with landowner interest in selling land. Generally, WPA's are limited to 2,000 acres or less under the Service's small wetlands program guidance. However, depending on landowner interest, we would consider a larger WPA in the Fairfield Marsh region.

3. The Service will continue to provide partial funding for a local coordinator position for one additional year. This funding will ensure that the FACT committee has an opportunity to contact all area landowners and explain conservation options. A longer-term salary funding commitment by the Service is not viable at this time. The Service already employs habitat restoration specialists who are responsible for this region of Wisconsin.

4. The Service will expand its effort to promote landowner participation in wetland and grassland restorations through our Partners for Fish and Wildlife program and assist with other conservation initiatives whenever possible.

5. With the support of partners, the Service will seek to secure federal funding for local WPAs through the Migratory Bird Fund and Land and Water Conservation Fund.

6. A long-term commitment by the local community is needed to maintain the FACT committee. Membership and meeting frequencies can change over time, but the vital function of the committee must be retained for years.

7. The FACT Committee will provide a single point-of-contact for information and coordination of technical assistance through existing public and private programs to landowners interested in voluntary conservation measures within the Fairfield Marsh project area.

8. In support of the FACT committee's recommendation to protect the lower Baraboo River, the Township Boards are strongly encouraged to protect the rural character of this watershed through local zoning.

## Table 1: Summary of Alternatives

| | Alternative A | Alternative B (No Action) | Alternative C | Alternative D | Alternative E (Preferred) |
|---|---|---|---|---|---|
| *Restoration of Habitat for Migratory Birds and Resident Wildlife* | Up to 8,495 acres, dependent upon landowner participation. | Some possible. | Up to 8,495 acres, dependent upon landowner participation. | Up to 5,109 acres, dep-. endent upon landowner participation. | Dependent upon landowner participation. |
| *Trout Habitat in Leech Creek* | Restoration of lower Leech Creek and partial watershed protection. | No change. | Restoration of lower Leech Creek and more complete watershed protection. | Restoration of lower Leech Creek and partial watershed protection. | Partial watershed protection dependent upon landowner participation. |
| *Water Quality/ Wetland Function* | Improvement on VPA and immediate headwaters of Leech Creek. | Declining due to increased residential development. | Improvement on VPA and and watershed north and south as well as immediate headwaters of Leech Creek. | Improvement on VPA and immediate headwaters of Leech Creek. | Maintained or improved, especially if riparian buffers are restored or enchanced. |
| *Impact on Taxes* | Slight to none. | None. | Slight to none. | Slight to none. | None. |
| *Impact on Land Values* | None to increased land value. | None. | None to increased land value. | None to increased value. | None. |
| *Economic Impact* | None to slight negative. | None. | None to slight negative. | None to slight negative. | None. |
| *Preservation of Rural Character* | Gradual decline in areas north and south of the proposal area. | Gradual decline throughout the proposal area. | Preservation of natural character. | Gradual decline in areas north, east and south of the proposal area. | Preservation of agriculture and natural character. |
| *Additional Landowenr Options for Conservation* | Additional options over current situation on 9,774 acres. | No change. | Additional options over current situation on 15,272 acres. | Additional options over current situation on 6,388 acres. | Additional options over current situation. |
| *Drainage and Drainage Districts* | Service will work with landowners and drainage districts to avoid and resolve any conflicts; existing private drainage will not be obstructed by the Service. | No change. | Service will work with landowners and drainage districts to avoid and resolve any conflicts; private private drainage will not be obstructed by the Service. | Service will work with landowners and drainage districts to avoid and resolve any conflicts; existing private drainage will not be obstructed by the Service. | No change. |
| *Fire Suppression* | Service fire suppression capability will be available to supplement existing local capability. | No change. | Service fire suppression capability will be available to supplement existing local capability. | Service fire suppression capability will be available to supplement existing local capability. | No change. |
| *Landowner Rights* | No change. | No change. | No change. | No change. | No change. |
| *Future of Hunting and Fishing* | Improved public opportunities. | No change. | Improved public opportunities. | Somewhat improved public opportunities. | Somewhat improved improved public opportunities. |

**Note: The EA approval process is the same under all alternatives including public input during scoping, public review and revision of the draft based upon public input. Each alternative, if selected, would end with a decision by the Service Regional Director on whether the proposed action has a significant impact on the human environment.**

# Chapter 3 - The Affected Environment

## I. Introduction

The study area encompasses the watershed basin of the former Fairfield Marsh, including the lower Baraboo River and the Leech Creek drainage. The area is bounded to the south by the crest of the front range of the Baraboo Hills and to the north by Interstate 90/94. The steep, forested bluff of the Baraboo Hills, the forested corridor of the Baraboo River and the spring-fed Leech Creek drainage are the primary existing natural features on the landscape. The 5,000-acre former wetland basin is crossed with a network of drainage ditches and buried tile lines. A large portion of the low-lying basin consists of crop fields and the highly organic "muck" soils there are annually planted in row crops including corn, soybeans and potatoes. The immediate uplands of the basin provide forage crops, such as alfalfa and clover, for local dairy operations (Figure 7).

Historically, the core basin portion of the study area was dominated by marshes, sedge meadows, tamarack swamps and wet prairies. Oak savanna, oak forests, hardwood swamps and shrub swamps occurred on higher ground along the Baraboo River (Figure 8). Today, a fragment of tamarack swamp remains at the northern edge of the marsh basin. Also to the west, Leech Creek meanders through a narrow valley of predominant shrub habitat, some tamarack trees and occasional short-grass open pastures. The steep, forested bluff of the adjoining Baraboo Hills contains a largely contiguous oak/maple forest with several short, spring-fed streams draining toward the Marsh. The hill on the north side of the study area contains a mix of open pastures, forage croplands and blocks of hardwood forest.

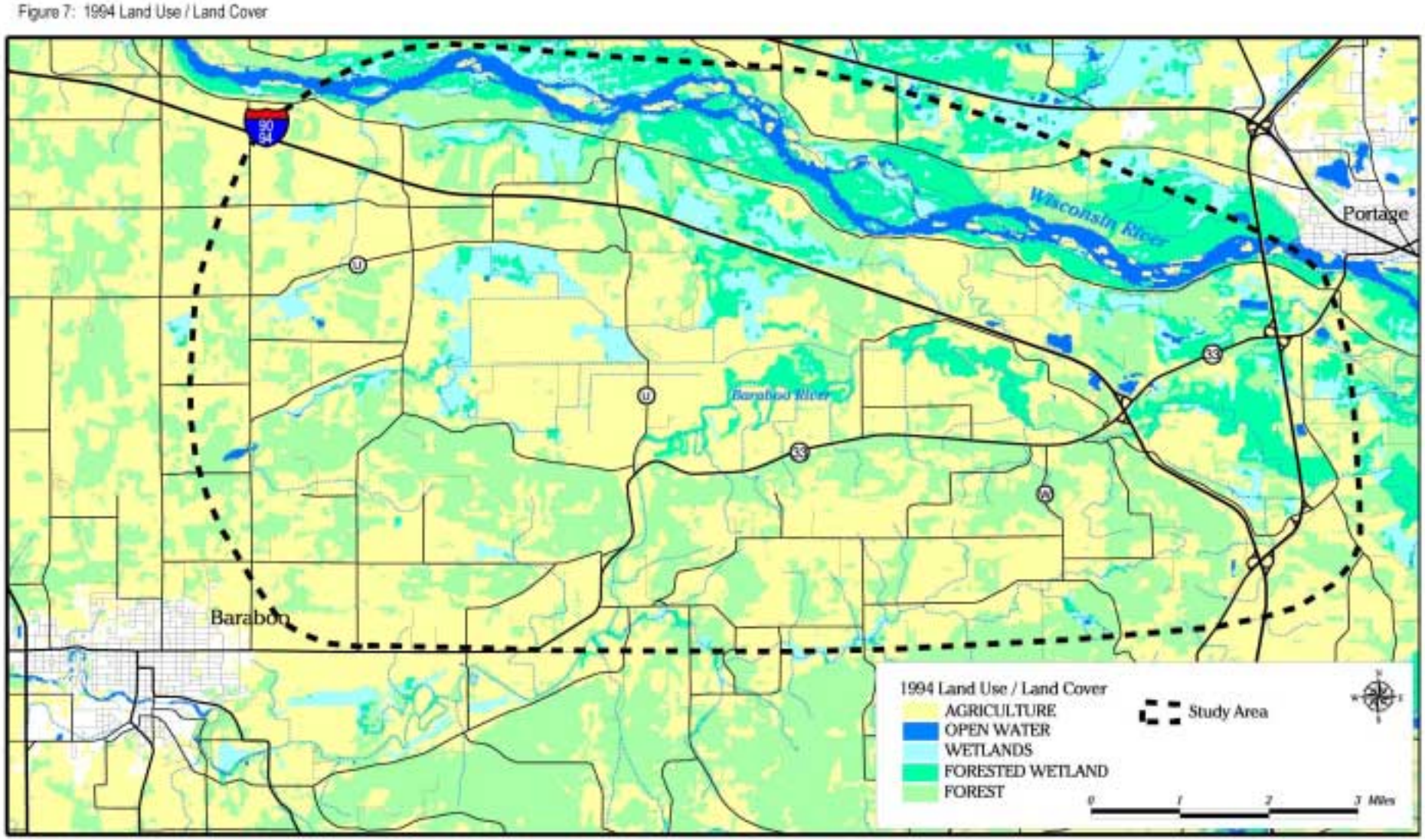
***The Fairfield Marsh was drained early in the last century.***

### The Fairfield Marsh

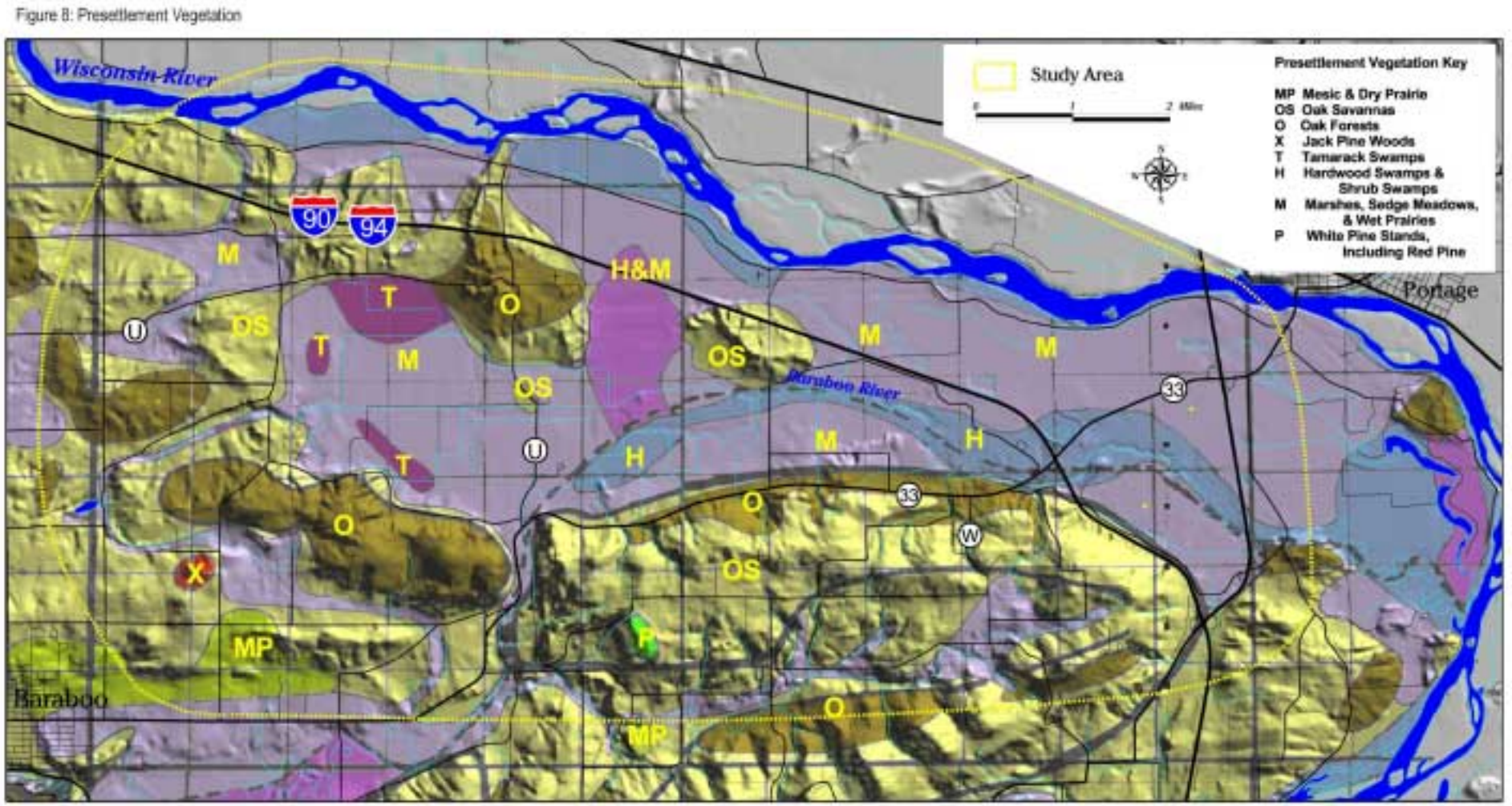
The Fairfield Marsh, also known as Potter's Marsh, was once an extensive wetland complex surrounding the lower Baraboo River. The marsh was sustained by several spring-fed tributaries. The marsh was created after the retreat of glaciers during the last ice age. The appearance of the pre-settlement marsh would probably surprise a modern day visitor; there are few remaining wetlands of this scale left in southern Wisconsin. Natural forces such as floods and fire were constantly at work to maintain the balance of this ecosystem. The water level in the marsh adjusted to the seasonal flow of the rivers and streams. The area abounded with wildlife attracted by the close proximity of river, forest, wet prairie, oak savanna and marshland habitats.

Native Americans were the first humans to visit the marsh. They undoubtedly were attracted by the migrations of ducks, geese and cranes during the spring

**Figure 7: 1994 Land Use / Land Cover**



## Figure 8: Presettlement Vegetation



and fall. Grassland species such as prairie chickens were locally abundant and larger game, such as bison and elk, may have been more visible on the open reaches of marsh and prairie.

Settlement of the Fairfield area by European immigrants began as early as 1839. Early settlers built farmsteads along the perimeter of the marsh. The cutting of marsh hay became an important source of livestock feed for these farms. Marsh grasses grew densely and an acre of sedge marsh could yield up to 2.5 tons of hay. During the late 1800s, oxteams pulling sleds with hayracks were a common sight on winter mornings in Fairfield Township, heading toward the big marsh (Jackson 1918). Area farmers cut marsh hay for stock and also for the elephants of the Ringling Circus, which had its winter quarters located in Baraboo from 1884 to 1918.

Draining of the 5,000-plus-acre Fairfield Marsh began in 1911-15 when Leech Creek was channelized along the lower 5 miles of its length. A large ditch was constructed running east-west to the Baraboo River across the flat marsh basin. Several smaller, north-south ditches were dug in subsequent years. The Baraboo River itself was extensively dredged in 1920. Periodic flooding continued and drainage improvements came over the years including the installation of water control gates at the end of the ditch in 1940 or 1941. Today, the heart of the former marsh is annually planted with row crops such as corn, soybeans, potatoes and other vegetables. A high water table and frequent springtime flooding events still place limits on farming success in the basin.

# II. The Current Ecological Condition

## Fish and Wildlife

### Mammals

The Study area supports a variety of resident mammals that are locally abundant depending on the availability of food sources, loafing areas and security habitat. White-tailed deer are abundant throughout the study area. Furbearers, including fox, coyote, opossum, mink, skunk and raccoons also are locally abundant. Fox squirrels, cottontail rabbits and woodchucks abound within suitable habitat. All of these species are very familiar to local farmers, hunters and highway motorists.

Mammals tend to be most abundant in habitat that borders agricultural fields and forest cover. Agricultural crops are seasonally important food sources to nearly all resident mammals, especially deer. Deer are also very visible while feeding in open fields. However, the availability of natural foods during winter, spring and early summer places limits on local mammal populations.

### Birds

The Wisconsin River region, including the Pine Island Wildlife Management Area, is an important migration stopover in spring and fall for many migratory birds. Puddle ducks; primarily mallards, wood ducks, and blue-winged teal, and Canada geese are frequently observed were water is available. The birds stop to refuel on their journey from wintering to nesting grounds. Resident Canada geese (giant), although less abundant, are year-round inhabitants of southern Wisconsin. Wild turkeys are commonly seen along the bluff, the Baraboo River corridor and other forested areas.

Sandhill cranes are spotted in the open fields and small wetlands throughout the study area. Cranes also nest within the Leech Creek river corridor. The International Crane Foundation in Baraboo conducts and compiles the sandhill crane census data for the state. There are 4 crane count study sites in the proposed study area. Crane counts fluctuate depending on year and site. For example, one site (Columbia County No. 115) recorded 27 single cranes plus two pairs in 1993. The same site in 1994 recorded three single cranes plus one pair (ICF 1999). A review of the data suggests that sandhill cranes use the study area for feeding, breeding, and migration in moderate numbers.

At Pine Island WMA, state biologists have conducted grassland bird surveys and have recorded several species of hawks, swallows, warblers, flycatchers, and sparrows, including the Henslow's sparrow (Sample, Pers. Comm.). No formal bird surveys have been conducted on the Fairfield Marsh study area. However, many of the birds recorded at Pine Island WMA probably use suitable portions of the study area.

### Fish

Leech Creek and the Baraboo River are the primary fish-bearing waters within the study area. Fish surveys have been conducted by the Wisconsin DNR on Leech Creek since the early 1970s. The upper half of the stream course is unaltered, whereas the lower half is a straight ditch running through agriculture fields. An initial fishery investigation in September 1970, found a fair population of 50 percent wild brown trout, with some reaching 18 inches, 50 percent hatchery brown trout and no brook trout in one-quarter mile of stream sampled between Patchin Road and Highway T. Due to the quality of the upper section of the stream it was ranked the number 2 trout stream in Sauk County. However, during the mid '70s a 50 percent decline in the trout fishery occurred, which was attributed to habitat degradation, beaver activity and overharvest. A survey in June 1994 found white sucker, brook trout, green sunfish, and several species of dace, darter, chub, and minnows within Leech Creek.

The lower Baraboo River does not support a sizable population of game fish due to a slow current and high water turbidity. Smallmouth bass, catfish, carp and bullheads are found in limited numbers throughout Baraboo River. Sculpins and white suckers are abundant within the study area portion of the river.

### Reptiles and Amphibians

Reptiles and amphibians are two distinct classes of vertebrate animals common to the area. Leech Creek, Baraboo River and several small wetland basins provide the aquatic habitat required for turtles, frogs, salamanders, and snakes.

### Threatened And Endangered Species

No Federally-listed threatened or endangered species currently use the study area. The Wisconsin Bureau of Endangered Resources lists two species that are state threatened and one plant that is of special concern. The Bell's vireo (*Vireo belli*), an uncommon migrant bird has been observed in the tamarack swamp and prefers riparian habitats. The fragile (brittle) prickly pear cactus (*Opuntia fragilias*) has been observed on the rocky outcrops and a pasture in Caledonia Township (Lange 1998). The prairie false dandelion (*Nothocalais cuspidata*) prefers sandy prairies and is designated of special concern.

## III. Biological Diversity

Biological diversity, in simple terms, is the variety of life and its processes. This variety may occur at the genetic, species, community, and ecosystem level. Biodiversity supports the stability, integrity, and resilience of ecological systems. It provides the raw material for evolving life and the "ecosystem services" upon which we depend, such as soil building, erosion control, and hydrologic cycles. In the State of Wisconsin, like elsewhere, biological diversity is declining. Loss of habitat, both physical and in function, is the greatest threat to biological diversity.

The study area retains a variety of plants and animals that is comparable to other agricultural areas within south-central Wisconsin. However, a significant portion of the natural biological diversity, especially among wetland plants and marsh and grassland-dependent bird species, was lost within the study area after the draining of the Fairfield Marsh.

## IV. Wetlands and Riparian Zones

Existing wetlands constitute only a small portion of the study area. The instream waters of Leech Creek and its twin headwater lakes, the Baraboo River, some small hillside creeks, the field drainage ditches and a few small marshes comprise the extent of permanent open waters in the study area. The remnant tamarack bog is about 200 acres in size. Wetland communities are among the most biologically productive areas on earth. Wetlands also help regulate and maintain the hydrology of rivers and lakes by storing and slowly releasing waters. They maintain the quality of water by storing nutrients, decreasing sediment loads, and reducing erosion. The former Fairfield Marsh once provided these functions to the lower Baraboo River and downstream communities.

***The Narrows, a gap between two bluffs on the Baraboo Hills, is a prominent landscape feature.***

Riparian, or streamside, zones comprise a more substantial portion of the study area (~15 percent). The narrow forest belt along the Baraboo River and most of the upper Leech Creek drainage would be classified as riparian habitat. These areas serve as the transition zone between the terrestrial and aquatic environments. Streamside vegetation contributes to channel structure, stabilizes erosive streambank soils, shades/cools flowing water and improves fish habitat.

## V. Geographic/Geologic Features

The study area is located between the floodplain of the Wisconsin River on the north and the Baraboo River and Baraboo Hills on the south. The Baraboo Hills, a pre-cambrian outcrop of quartzite rock, reaches its northernmost extent here. The study area itself was glaciated during the last ice age but the terminal moraines of the Wisconsin Glacier begin near the northern boundary. The dra-

matic opening between two hill faces on the south side of the study area is known as the Lower Narrows. This gap is where the Baraboo River enters the study area and traverses eastward before it confluences with the Wisconsin River. The spring-fed Leech Creek enters the study area on the west side and also traverses eastward before it confluences with the Baraboo River. Several short, small streams descend from the hills and feed the lower Baraboo River.

## VI. Archaeological and Cultural Resources

Native Americans were the first people to live near the Fairfield Marsh and probably used the resources found there for centuries. Euro-American settlers first moved to the marsh's perimeter around 1838. Little physical evidence remains of the activities and lifestyles of these early inhabitants. The State Historical Society of Wisconsin reports 10 known archaeological sites around the edges of the study area. No sites were identified within the former marsh basin. However, no investigations to identify cultural resources in the study area have been performed. As of August 20, 1999, 32 properties in Columbia County and 39 properties in Sauk County are listed on the National Register of Historic Places. In the vicinity of the project, the area around Portage contains 11 prehistoric and historic properties on the National Register. Nearby Delton Township contains three properties. The Aldo Leopold shack, located 1 mile north of the study area, is also listed on the National Register of Historic Places.

# Chapter 4 - Environmental Consequences

## I. Environmental Consequences Related To Natural Resource Concerns

### Alternative A

*National Wildlife Refuge with a Voluntary Acquisition Area and Voluntary Watershed Maintenance Zone (Leech Creek Headwaters Only)*

Resident Wildlife

Resident wildlife populations would continue natural trends or moderately increase under this alternative. Hunted species such as white-tailed deer and wild turkey would remain abundant throughout suitable habitat in the study area. Deer populations would be controlled within the proposed refuge. Crop depredations from deer, turkey, raccoons and other species would remain at current levels or increase slightly. Croplands adjacent to refuge land would continue to incur some depredation. However, natural food and cover on restored lands would provide additional food sources for deer and other wildlife year-round.

Resident mammal populations, especially furbearers, would increase with the new wetland habitats. Raccoon, mink and muskrats would use these restored wet areas. The nesting bird population, and higher numbers of small mammals such as mice and voles, would provide an improved food source for hawks, owls and other predators. Coyote and fox numbers would increase along with the small mammal populations found in the grasslands.

Migratory Birds

Restored wetlands and adjacent uplands within the Fairfield Marsh basin would provide nesting, feeding and brood rearing habitat for waterfowl. Puddle ducks, such as mallards, blue-winged teal and northern shovelers, would nest in suitable grassland areas. Migrating waterfowl would continue to use the area during spring and fall; depending on seasonal weather, cropland and water conditions. Overall numbers of migrant waterfowl, including Canada geese and sandhill cranes, would increase with new open water areas. The Service's Regional Migratory Bird staff have estimated that the restored marsh could receive an average of 68,000 duck-use-days (For example: A pair of migrating ducks that stay for 7 days equals 14 duck-use-days). Resident (Giant) Canada geese will also use new open water habitat. However, the refuge would not provide the short grass and crop residue preferred by resident Canada geese. Crop depredations from sandhill cranes and Canada geese would remain at current levels or increase slightly on adjacent lands. Habitat for wading birds and grassland-dependent songbird species would increase substantially under this alternative.

The following migratory bird species are listed as Resource Conservation Priorities by Region 3 of the U.S. Fish and Wildlife Service or as State species of Special Concern, as determined by the Wisconsin DNR: The species are organized by their primary breeding habitat requirement. All of these species would benefit from Alternative A:

*Marsh/sedge meadow species* - American bittern, least bittern, mallard, blue-winged teal, trumpeter swan, black tern, sedge wren, Wilson's phalarope, northern harrier, king rail .

*Wet prairie/ oak savanna* – loggerhead shrike, dickcissel, grasshopper sparrow, bobolink, eastern meadowlark, red-headed woodpecker, lark sparrow, western meadowlark.

*Forest edge/riparian corridor* – wood duck, American woodcock, golden-winged warbler, Louisiana waterthrush, yellow-breasted chat.

### Fish

A restored lower Leech Creek, with adequate riparian vegetation, would nearly double the amount of habitat for native or stocked brown and brook trout. In addition, the voluntary habitat protection measures promoted in the Leech Creek Watershed would enhance existing fish habitat. Fishing pressure has been noted as a limiting factor for the Leech Creek fishery and harvest levels and/or seasons may need adjustment by the Wisconsin DNR. Stocking efforts would also be determined by the DNR.

### Biological Diversity

The restoration of marsh, grassland and oak savanna habitats will attract a wider array of plant and bird species than currently use the study area. Native prairie grasses, such as bluestem and switchgrass, would be planted and maintained in suitable areas. The new grasslands would provide nesting habitat for 40 or more grassland-dependent songbird species. Some of these birds currently use the study area, or nearby habitat, but only in limited numbers.

### Wetland Function

Alternative A would result in the eventual restoration of up to 4,000 acres of marsh, forested wetland and wet prairie. The original meanders of Leech Creek would be re-established along with it's natural hydrologic function. Spring flood waters would fill a large portion of the basin and provide for a gradual flow into the lower Baraboo River. Sediment carried into the Baraboo River would also decrease with the reduction of row crop farming in the basin.

## Alternative B: No Action

### Resident Wildlife

Resident wildlife populations would continue natural trends under this alternative. Hunted species such as white-tailed deer and wild turkey would remain abundant throughout suitable habitat in the study area. Crop depredations from deer, turkey, raccoons and other species would remain at current levels or increase slightly.

### Migratory Birds

Migrating waterfowl would continue to use the area during spring and fall; depending on seasonal weather, cropland and water conditions. Resident (Giant) Canada geese will also use the area based on food availability and nearby open water. Crop depredations from sandhill cranes and Canada geese would remain at current levels or increase slightly. Nesting waterfowl pairs would increase slightly if new small wetland basins are restored. Habitat for wading birds and grassland-dependent songbird species would be limited to the existing riparian corridors and small wetland areas.

### Fish

No stream habitat improvement projects would result under this No Action alternative. The trout fishery would remain stable or decline based on fishing pressure and whether new beaver dams are removed in the future.

### Biological Diversity

New plant, bird or mammal species will probably not move into the study area in the near future without substantial changes in existing land uses. However, a few species may pioneer the area as a part of a natural range expansion (as coyotes have done in recent years). Rare plant species, primarily along the Baraboo Bluffs, may lose habitat to residential development, rock quarries and logging. A slight decline in overall biological diversity would be expected under the No Action alternative over time.

### Wetland Function

No large marshes or wet prairies would be added to the study area under this proposal. A few small wetland basins could be restored under existing Partnership programs. Drainage and row crop farming within the former Fairfield Marsh basin would continue depending on the future agricultural economy. The ability of the basin to hold flood waters would remain at the current level.

## Alternative C

*National Wildlife Refuge with a Voluntary Acquisition Area and Complete Voluntary Watershed Maintenance Zone*

### Resident Wildlife

Similar to Alternative A with the added benefits of a Voluntary Watershed Maintenance Zone. This area would supplement the habitat needs of several wildlife species that require upland forests as well as wetlands. However, the upland forests would remain the primary habitat for wild turkeys in the study area.

### Migratory Birds

The additional habitat provided by the Voluntary Watershed Maintenance Zone would encourage a higher number of edge/riparian species including wood duck, American woodcock, golden-winged warbler, Louisiana waterthrush, yellow-breasted chat.

### Fish

The protection of existing land uses within the Voluntary Watershed Maintenance Zone will ensure higher water quality for fish and their invertebrate food source in the restored basin.

Biological Diversity
Similar to Alternative A with a higher benefit to migratory birds that use forest habitat.

Wetland Function
Similar to Alternative A except the expanded Voluntary Watershed Maintenance Zone would further help sustain the natural flow of water from the Baraboo Hills and Leech Creek. Water quality within the restored marsh would be enhanced by voluntary conservation measures within the upper watershed.

## Alternative D

*National Wildlife Refuge with a Voluntary Acquisition Area (Marsh Basin Only) and Voluntary Watershed Maintenance Zone (Leech Creek Headwaters Only)*

Resident Wildlife
Similar to Alternatives A and C but reduced grassland acres will result in fewer small mammals and their predators.

Migratory Birds
Grassland-dependent birds would not receive a high benefit. Up to 3,000 acres of upland habitat included in Alternatives A and C is not a part of this alternative.

Fish
Similar to Alternatives A and C with a possible reduction in sustained water quality.

Biological Diversity
Similar to Alternative A and C, except that up to 3,000 fewer acres would be available for grassland restoration efforts.

Wetland Function
Alternative D would result in the eventual restoration of over 3000 acres marsh, forested wetland and wet prairie. Alternative D would not include several miles of riparian forest, a part of Alternatives A and C, as the refuge boundary would end at the Sauk/Columbia county line.

## Alternative E (Preferred)

*Fairfield Marsh Conservation Partnership*

Discussion
Alternative E was selected as the preferred course of action for the Service because of the strong community endorsement of the FACT approach. The success of this approach hinges on the commitment and participation of individual landowners, conservation groups and local governments toward a shared conservation vision. There are many potential benefits of a widely accepted, dynamic land conservation effort in the historic Fairfield Marsh region.

Under Alternative E, all conservation tools described under the refuge alternatives will be available to landowners; except the ability to sell lands for inclusion

in a national wildlife refuge. Alternative E also offers new opportunities such as the possibility of special status for the area in U.S. Department of Agriculture conservation programs. However, some of the original goals of the refuge proposal will not receive priority emphasis under this alternative. Primarily, opportunities for wildlife-dependent recreation by the public will be limited to lands where the rights for public access have been purchased, donated or granted by the landowner. In addition, the Service's legal responsibility to conserve, enhance and restore endangered species and migratory birds, especially declining grassland bird populations, will be more dependent upon citizen and local government actions than under the other action alternatives.

### Resident Wildlife

Resident wildlife populations would increase under this alternative. More food and cover would be available if small habitat restorations occur within croplands. Hunted species such as white-tailed deer and wild turkey would remain abundant or increase throughout suitable habitat in the study area. Crop depredations from deer, turkey, raccoons and other species would remain at current levels or increase slightly depending upon hunting pressure on private lands. Crop depredation was identified as a concern by the FACT Committee and is further described in Appendix A. The Wisconsin Department of Natural Resources administers the Wildlife Damage Abatement and Claims Program to assist landowners with wildlife damage problems. Crop damage programs by the FACT Committee could also reduce wildlife impacts.

### Migratory Birds

Migrating waterfowl would continue to use the area during spring and fall; depending on seasonal weather, cropland and water conditions. Migrating waterfowl use would likely increase if additional wetland habitat is provided. Crop depredations from sandhill cranes and Canada geese would remain at current levels or increase slightly. Restoration of the Fairfield Marsh itself could lead to a reduction in sandhill crane crop depredation.

The number of nesting waterfowl would increase as new wetland basins or the Fairfield Marsh itself are restored. Depending on landowner participation, habitat for wading birds and grassland-dependent songbird species would be limited to the existing riparian corridors and small wetland areas. Ground-nesting songbirds and waterfowl may be disadvantaged unless suitable size grassland areas are provided. Nest predation levels are high within the "edge" areas of mixed grasslands, woodlots, croplands and ponds.

### Fish

Riparian and instream habitat improvement projects may be a part of Alternative E. If so, some fish species and aquatic invertebrates would benefit. In general, resident fish populations in the Baraboo River should remain stable depending on other environmental factors. The trout population within Leech Creek would remain stable or increase slightly. The success of the trout fishery may depend more on fishing pressure and whether new beaver dams are removed in the future. However, it would also benefit from restoration of the steam channel in the lower reaches of Leech Creek.

### Biological Diversity

New plant, bird or mammal species will probably not move into the study area in the near future without substantial changes in existing land uses. However, a few species may pioneer the area as a part of a natural range expansion (as coyotes have done in recent years). Rare plant species, primarily along the Baraboo Bluffs, may lose habitat to residential development, rock quarries and logging unless local zoning or landowner efforts can reverse the trend. Long-term biological diversity would be expected to remain stable under Alternative E and eventually increase over time.

### Wetland Function

Eventually, a large portion of the drained hydric (wetland) soils within the former Fairfield Marsh basin could be restored under this alternative. However, the bulk of the restoration work may occur on a small scale under existing partnership programs until there is landowner interest in restoration of the main marsh basin. Full drainage and row crop farming within the basin would continue until there is landowner interest in wetland restoration or other conservation practices, conversion to something other than row crops, or interest in the sale of property to the Service for inclusion in a WPA. The ability of the basin to hold flood waters would be enhanced with each wetland restoration.

## II. Environmental Consequences Related to the Socioeconomic Environment

During the initial public scoping for the Aldo Leopold NWR proposal many people, including local and state government officials, expressed concern over the possible impacts of refuge establishment on the local and regional economy and on tax revenues for Fairfield and Caledonia Townships. Due to the high interest, the planning team decided to request an economic study from an independent, private firm to examine these issues. The Service's Division of Economics in Washington, D.C. contracted with Industrial Economics, Inc. of Cambridge, Massachusetts to do the study. The firm received guidance and input from John Stoll, Professor of Economics, University of Wisconsin–Green Bay. The Economic Assessment was completed in August 1999 and is presented in its entirety as Appendix B.

The Economic Assessment pertains only to the three refuge alternatives. The study was not revised to include Alternative E, the Fairfield Marsh Conservation Partnership alternative. However, the potential impact on local taxes of Alternative E would be comparable to the No Action alternative (Alternative B). Annual federal revenue sharing payments would be made for any lands acquired as Waterfowl Production Areas. Lands enrolled in government conservation programs remain as private lands and landowners retain the responsibility for property taxes. However, benefits to the local economy associated with a national wildlife refuge, including visitor expenditures and local construction and staffing incomes, are not expected under Alternative E or at best would be reduced significantly under a Waterfowl Production Area option.

In general, the report found that the proposed refuge would have three principal effects on the regional economy of Sauk and Columbia Counties: (1) increased spending in the area by visitors to the proposed refuge, (2) reduced agricultural production, (3) increased expenditures by the Service to build and maintain

## Table 2: Summary of Possible Natural Resource-related Environmental Consequences

| | Alternative A | Alternative B | Alternative C | Alternative D | Alternative E |
|---|---|---|---|---|---|
| *Resident Wildlife* | Slight increase in resident mammals and crop depredation. | Stable. Resident species will follow natural trends. Crop depredation at current levels. | Increased. New watershed measures will supplement wildlife habitat beyond Alt. A Slight increase in crop depredation. | Similar to Alt. A and Alt. C with less grassland habitat for dependent wildlife. | Increased. Voluntary measures will supplement wildlife habitat beyond Alt. B. Slight increase in crop depredation. |
| *Migratory Birds* | Increased. New wetland habitat for migrating and nesting ducks, geese and cranes. Increase in grassland bird habitat. | Decrease in grassland bird species. Limited seasonal waterfowl use depending on weather and water conditions. | Increased. More edge/ riparian bird species due to watershed approach. Marked increase in grassland birds. | Similar to Alt. A. and Alt. C. minus 3,000 acres for use by grassland birds. | Stable to increased. New waterfowl habitats depending on landowner participation. Stable to increased grassland bird species. |
| *Fish* | Increased. A restored Leech Creek would double the existing trout habitat. | Stable to decreased. Trout fishery remains in upper watershed only. | Increased. Higher water quality with watershed approach. | Similar to Alt. A. with some loss in fish habitat quality in Baraboo River. | Stable to increased. Trout ishery remains in upper watershed only. Gain in Baraboo River water and fish habitat quality. |
| *Biological Diversity* | Increased. New oak savanna, grassland and marsh habitats will broaden array of plants, birds and invertebrates. | Stable to decreased. Potential loss of rare plants and songbirds within watershed due to development. | Increased. Similar to Alt. A. with more habitat for forest-dependent birds. | Increased. Less grassland area and fewer species than Alt. A and Alt. C. | Stable to increased. Rare plants and wildlife will receive secondary benefits. Some loss due to future development. |
| *Wetland Function* | Increased. Restoration of up to 4,000 acres of wetlands. Enhanced flood control and water quality. | Stable to slight increase. Small basin restorations may occur. All drainage structures will remain in place. | Increased. Voluntary watershed protection will ensure water quantity and quality beyond Alt. A. and Alt. D. | Similar to Alt. A. with decreased function outside of core basin. | Stable to slight increase. Small basin restorations will occur. All drainage structures will remain in place. Increased benefits if Fairfield Marsh is restored. |

refuge facilities. Their analysis suggests that full implementation of the refuge proposal after 20 years of land purchases could result in a **net** reduction in regional output of $1.7 to $3.1 million annually. This change is equivalent to four to seven *one-hundredths* of 1 percent (0.04 -0.07 percent) of 1998 output for Sauk and Columbia counties.

The authors of the Economic Assessment state several reasons why the results likely overstate the true regional economic impacts of the proposed refuge:

(1) The results reflect a static comparison of the entire refuge proposal with the current regional economy. In reality, the refuge would be developed over the course of twenty years or more. Over this time period, any workers displaced would be re-employed in other uses. Similarly, regional output will increase over this time period, thereby reducing the relative magnitude of the impacts;

(2) The impact estimates should be considered in the context of larger trends in Wisconsin which indicate declining agricultural employment and farmland acreage;

(3) These impacts will be mitigated by engineering and construction expenditures by the Service during the 20-year development period. Specifically, in total, these expenditures will contribute over $6 million in output and nearly $900,000 in employee compensation. Given these mitigating factors, the net economic impacts arising from a refuge project are unlikely to be perceptible at the county level.

The economists did not analyze the impact of land purchases to the local economy. The Service estimates that federal land purchases in the area could amount to over $12 million during the next 20 years. Economists generally view private sector land transactions as having a neutral effect in a local economy. However, it is reasonable to assume that a portion of the land acquisition dollars will be used by sellers to construct new homes, purchase new vehicles, etc.

## Taxes

The Wisconsin Department of Revenue completed an analysis of potential tax implications of the initial refuge proposal. Their study results indicate a slight increase may occur at the township level upon the proposed refuge land acquisitions. These impacts range from an estimated two dollar increase on an average home in Caledonia to an estimated $17 increase on an average home in Fairfield. Tax impacts on the county and school district level are likely to be negligible. In general, state and FWS compensation will likely offset the majority of the reduction in tax base associated with the proposed refuge.

In summary, the proposed action alternatives would have a small *net* effect on county-level economic activity and could generate considerable social benefits. The value of natural areas, such as wildlife refuges, to people and their quality of life is difficult to measure in conventional economic terms. National Wildlife Refuges, or a successful Service/private landowner partnership, enhance the regional, state and the nation's stock of natural assets and provide significant, less tangible benefits to its citizens, including clean water, natural beauty and abundant wildlife, fish and native plants. Nevertheless, the Service recognizes that potential changes in the local and regional economy are important considerations.

## III. Environmental Consequences Related to Local Land Use including Land Acquisition, Cultural Resources, Management and Administration

This section examines a collection of issues that may impact landowners and local residents if an organized conservation project is implemented within the study area. Alternatives A, C and D include refuge land acquisition and future refuge operations and administration. Alternative E also includes a requirement for oversight due to the numerous habitat restorations under the Partners for Fish and Wildlife Program, potential conservation easements and possible Waterfowl Production Areas. For this reason, we decided to address all action alternatives together within this section. More detail can be found on these topics in Appendix C, the Conceptual Management Plan (CMP). The CMP provides general guidelines for the future management and administration of any lands acquired as a Waterfowl Production Area.

### Landowner Rights Adjacent to Service Lands

If a refuge or WPA is established, the Service has no more authority over private land within or adjacent to the boundaries of the unit than another other landowner. Landowners within a project boundary retain all of the rights, privileges, and responsibilities of private land ownership. The presence of federal lands does not afford the Service any authority to impose restrictions on any private lands. Control of access, land use practices, water management practices, hunting, fishing, and any other general use is limited to those lands in which the Service has acquired an appropriate real estate interest.

Owning land adjacent to Service land does not change any of the regulations that currently apply and does not impose any new regulations on the land. Regulations pertaining to pesticides, drainage, pollution, hunting, fishing, trapping, etc., on private land are managed and enforced by other local, state or Federal agencies. The Service must abide by these regulations the same as any other landowner. In addition, land managed by the Service will be posted in order to avoid trespass on private land by visitors.

### Service Land Acquisition Policies

It is Service policy to buy land only from willing sellers. It is also Service policy to seek the least amount of land ownership necessary to meet resource protection goals. All five alternatives include voluntary land protection, stewardship and conservation measures as options for landowners. Fee acquisition is only one part of the preferred alternative. If a landowner chooses to sell land or a conservation easement to the Service, and funding is available, a Project Manager and/or a Realty Specialist will fully explain the procedure and timeframes.

### Revenue Sharing Payments

The Refuge Revenue Sharing Act of June 15, 1935, as amended, provides for annual payments to counties or the lowest unit of government that collects and distributes taxes based on acreage and value of National Wildlife Refuge lands (including Waterfowl Production Areas) located within the county. The funding for these payments comes from two sources: (1) net receipts from the sale of

products from National Wildlife Refuge System lands (oil and gas leases, timber sales, grazing fees, etc.) and (2) annual Congressional appropriations.

*Drainage from neighboring agricultural lands would not be impeded by restoration actions.*

Originally, counties received 25 percent of net revenues from the sale of various products or privileges from refuge lands located within the county. The result was that many counties received no payments as no revenue was generated from local refuge lands. The Refuge Revenue Sharing Act was amended in 1964 to provide for a payment of the greater of 25 percent of net receipts, $0.75 per acre or three-quarters of 1 percent of the adjusted purchase price for all purchased land. In the state of Wisconsin, three-quarters of 1 percent of the appraised value always brings the greatest return to the taxing bodies (townships and counties).

The Refuge Revenue Sharing Act was again amended in 1978 by Public Law 95-469. Important changes were: (1) Congress is authorized to appropriate funds to make up any shortfall in the revenue sharing fund; (2) all lands administered solely or primarily by the FWS (not just refuges) qualify for revenue sharing; and (3) payments to units of local government can be used for any governmental purpose.

The amount of a revenue sharing payment is directly tied to the **appraised** market value of a property. In some cases, annual payments to local governments exceed what the local tax, based on assessed value, would have been if the land was still in private ownership. In other cases, revenue sharing payments, and supplemental Congressional appropriations, fall short of the local assessed property tax revenue. Some members of Congress have recognized this fact and have recently taken steps, including the introducing legislation, to remedy the situation.

## Relocation Policies

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act) provides for certain relocation benefits to home owners, businesses, and farm operators who are displaced as a result of Federal acquisition. The law provides for benefits to eligible owners and tenants in the following areas:

- Reimbursement of reasonable moving and related expenses;
- Replacement housing payments under certain conditions;
- Relocation assistance services to help locate replacement housing, farm, or business properties;
- Reimbursement of certain necessary and reasonable expenses incurred in selling real property to the government.

## Cultural Resources

No archeological or cultural sites have been identified within the project area. However, activities associated with land management such as habitat improvements and construction of visitor facilities have the potential to affect undiscov-

ered cultural resources. Cultural resources include historic places, standing buildings, districts, landscapes, prehistoric and historic archeological sites, sacred and religious sites, human remains and objects of cultural patrimony. The Service has procedures to identify potential cultural resources during the land acquisition process and prior to any management projects.

### Effects On Current Drainage Patterns

The Service would not cause any artificial increase of the natural level, width, or flow of waters without ensuring that the impact would be limited to lands in which the Service has acquired an appropriate real estate interest from a willing seller; e.g., fee title ownership, flowage easement or cooperative agreement. Thus, all alternatives would not have any impact on drainage from neighboring lands. If Service activities inadvertently created a water-related problem for any private landowner (flooding, soil saturation or deleterious increase in water table height, etc.), the problem would be corrected at the Service's expense.

In addition, the Service may be able to provide a payment for existing state-chartered drainage districts, or complete in-kind work within drainage ditches or streams. However, the eventual restoration goal is to re-establish a natural Leech Creek and Fairfield Marsh. Please see Chapter 1 and Appendix C for a further explanation of the drainage issue.

### Refuge and WPA Administration

If alternatives A,C, or D were chosen, any lands acquired by the Service would become part of the National Wildlife Refuge System. The new refuge could be managed administratively as a satellite refuge by an existing national wildlife refuge or wetland management district. Under Alternative E, any new WPA lands would be administered by the Leopold Wetland Management District. As the land base increases, the complexity of habitat management and administration increases, and a new refuge would probably be assigned its own funding, equipment, and staff. Speaking very generally, a fully staffed refuge of this size would have about seven staff members and an annual operating budget of approximately $600,000. Large WPA acquisitions under Alternative E would also require an increase in staffing and budget for the Wetland District office.

### Public Recreational Use

The Refuge Improvement Act of 1997 identifies six priority uses: hunting, fishing, wildlife observation, photography, environmental education, and interpretation as wildlife-dependent recreational activities. These uses are encouraged on refuges and WPA's when they are compatible with the purposes of the unit. Currently, we anticipate that all six priority uses will be allowed on any future refuge or WPA. Generally, public use facilities such as overlooks, boardwalks, and hiking trails are more extensive on national wildlife refuges than they are on WPAs.

Public recreational use is permitted on all WPAs and nearly all national wildlife refuges. There are 46 national wildlife refuges in the Great Lakes-Big Rivers Region of the U.S. Fish and Wildlife Service, which includes Wisconsin, Minne-

sota, Iowa, Illinois, Indiana, Michigan, Ohio and Missouri. Of these, 39 are open to various public uses. The seven that are not open include two caves with endangered species and five islands used by colonial nesting birds.

Three additional issues were listed in Chapter 1 including **fire suppression** and the **future of hunting and fishing**. These topics are discussed in detail in the Conceptual Management Plan (Appendix C). **Additional landowner options for conservation** are presented in Chapter 2 and in FACT's proposal (Appendix A).

## IV. Cumulative Impacts

The phrase "cumulative impacts" refers to the overall effect of the proposed action, or a series of actions, in a landscape or regional setting. Restoring natural wildlife habitat, as proposed in all five alternatives, is generally considered to have positive environmental consequences. Wetland function, native prairie plant communities, waterfowl, and other migratory bird populations will all benefit on a regional basis. The restoration of lost or degraded wetlands in particular will have an overall positive impact on the surrounding region and the human environment. None of the five alternatives will contribute to any adverse environmental or social cumulative impacts.

## V. Environmental Justice

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was signed by President Clinton on February 11, 1994, to focus Federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Order directed Federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in Federal programs substantially affecting human health and the environment, and to provide minority and low-income communities access to public information and participation in matters relating to human health or the environment.

In 1997, U.S. Census Bureau figures showed that 6 and 8 percent of the residents of Columbia and Sauk counties, respectively, lived below the poverty level. In 1999, less that 3 percent of each County population was reported as a racial minority. The minority population is small in Sauk and Columbia Counties and the poverty rate is low. Based upon the U.S. Census Bureau figures, and the voluntary nature of the proposed conservation initiative, it is apparent that the project does not disproportionately place any adverse environmental, economic, social, or health impacts on minority and low-income populations.

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# Appendices

**Appendix A: Farming and Conservation Together Proposal**

**Appendix A1: List of Letters and Resolutions**

**Appendix B: Economic Assessment of the Proposed Aldo Leopold NWR**

**Appendix C: Conceptual Management Plan**

**Appendix D: Landowner Questions and Answers**

**Appendix E: Legal Compliance**

**Appendix F: Stream Restoration Techniques**