U.S. Fish & Wildlife Service

Iowa

Wetland Management District

Environmental Assessment and Draft Comprehensive Conservation Plan

U.S. Department of the Interior
Fish and Wildlife Service
Region 3 (Midwest Region)
Division of Conservation Planning; Bloomington, MN

The mission of the U.S. Fish & Wildlife Service is working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people.

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Comprehensive Conservation Plans provide long-term guidance for management decisions; set forth goals, objectives and strategies needed to accomplish refuge purposes; and, identify the Fish and Wildlife Service's best estimate of future needs. These plans detail program planning levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
5600 American Blvd. West, Suite 990
Bloomington, MN 55437-1458

Monday, August 19th, 2013

Dear Reader:

We are pleased to provide you with this Environmental Assessment and Draft Comprehensive Conservation Plan (EA/CCP) for the Iowa Wetland Management District (WMD, district).

The Iowa WMD encompasses 35 counties in north-central and northwest Iowa following the southern range of the poorly drained Prairie Pothole Region. The primary purposes of the district are production areas for waterfowl and habitat for migratory birds. Together with the Iowa Department of Natural Resources, the U.S. Fish and Wildlife Service (Service) provides wetland habitat with adjacent upland grassland habitat across the district.

This EA/CCP identifies and evaluates a range of alternatives for managing the Iowa WMD. Four alternatives are described, compared, and assessed, including a No Action Alternative (Alternative A) as required by the National Environmental Policy Act regulations. The final version of this plan will guide management of the district over the next 15 years. It will also help the district meet its purposes and contribute to the mission of the National Wildlife Refuge System as well as provide both broad and specific guidance for management of the district's physical, biological, socio-economic, and cultural resources.

Public involvement in the planning process is essential for development of a quality plan. We invite you to review the document and submit comments to ensure that the final CCP is both visionary and practical. We will host open houses where you will be able to ask questions and voice concerns and suggestions. Meeting dates and locations will be announced through local media outlets and by other means.

Please submit your comments to the Service during the 30-day public review period so they can be taken into consideration during the preparation of the final CCP. Address comments to: U.S. Fish and Wildlife Service, Iowa WMD, Attention: CCP Comment, 1710-360th Street, Titonka, Iowa, 50480; fax comments to "District Manager" at 515-928-2230; and e-mail comments to r3planning@fws.gov (include "Iowa WMD CCP Comment" in the subject line).

Please review and provide comment on the plan's content by Tuesday, September 17th, 2013. All comments received from the public will become part of the Service's planning record.

We look forward to continuing the dialogue about the future of the district, and thank you for your continued interest in keeping the district a special place for both wildlife and people.

Sincerely,

Tom Larson
Chief, Division of Conservation Planning

Iowa

Wetland Management District

Environmental Assessment and Draft Comprehensive Conservation Plan

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Executive Summary

Introduction

This Environmental Assessment documents the National Environmental Policy Act (NEPA) process for developing a Comprehensive Conservation Plan (CCP) for the Iowa Wetland Management District (WMD, district). In general, scoping reveals issues that drive alternative ways of managing the district. Implementation of each of those alternative management styles (including the No Action Alternative) may have different effects on the physical, biological, and socio-economic environment. Analysis of these effects reveals the "preferred" alternative, which constitutes the CCP. The CCP includes goals, objectives, and strategies for the district to guide overall management for the next 15 years.

The Iowa WMD consists of scattered tracts of habitat (both wetland and upland grassland) known as Waterfowl Production Areas (WPAs). As of 2011, there are 75 WPAs in 18 counties in north-central Iowa totaling 24,712 acres in fee title primarily managed by the Iowa Department of Natural Resources (DNR). Even though district acquisition has only occurred in 18 counties to date, a larger 35-county boundary is approved. This boundary follows the historic range of the poorly drained Prairie Pothole Region (PPR) in Iowa, an area known for its waterfowl production. The district also includes 575 WPA acres and approximately 434 Farm Service Agency acres in conservation easements on private land. This plan was prepared with the intent that the strong partnership with the Iowa DNR will continue over the next 15 years.

District Vision

Waterfowl and other winged wildlife herald the richness of resilient, productive wetlands and tallgrass prairies, bringing appreciation and satisfaction to visitors, the rewards of enduring commitments across ownerships throughout the Prairie Pothole Region of Iowa.

District Goals

Wildlife: In partnership with the Iowa DNR and others, restore a natural diversity and abundance of waterfowl, migratory birds, and other native fauna within the Iowa WMD.

Habitat: In partnership with the Iowa DNR and others, conserve, restore, and expand grassland and wetland habitat managing for a natural diversity of native flora within the Iowa WMD.

People: In partnership with the Iowa DNR and others, promote understanding, appreciation, and support for the Iowa WMD as well as stewardship and understanding of the southern Prairie Pothole Region and its native ecosystems to visitors and local residents.

Public Involvement

Initial conversations about comprehensive planning for the district began mid-year of 2009; however, the official scoping period began in December 2011. In addition to identifying information that would be needed in the planning process, district staff also developed a communication plan and a preliminary list of issues to be addressed in the CCP. The public scoping period began on January 30, 2012 and lasted for 30 days. The public was contacted

through letters, new releases, and open house meetings. The open houses gave the public an opportunity to discuss issues with district and Iowa DNR staff and regional planners.

Issues

Scoping produced ten issues that were addressed when developing alternative ways of managing the district:

- What species group and life cycle is the focus of district management?
- How should the district address the decrease in populations of grassland-dependent birds due to the decline of grassland habitat?
- How can the district improve/maintain upland habitat quality?
- What wetland type is the focus of district management?
- How can the district improve/maintain wetland quality?
- How can the district manage food plot use?
- How will the district address the decreasing purchasing power of existing funds?
- What are the district's priority areas for acquisition?
- How can the district promote awareness and understanding of WPAs as well as educate the public on the importance of their management?
- What public uses can the district allow that are appropriate and compatible with the U.S. Fish and Wildlife Service (FWS, Service) and National Wildlife Refuge System mission and meet the public demand for more recreational opportunities?

Preferred Alternative

Four management alternatives (including the No Action Alternative) were developed based on the issues determined during scoping. The primary driver for each alternative was focal species group and life cycle. Alternative D is the preferred alternative and is mostly a combination of the other alternatives (including parts of the No Action Alternative). Breeding waterfowl, primarily represented by Mallard and Blue-winged Teal would be the focus for management activities. The dominant activity would be restoring cropland to perennial grassland and wetlands.

Restoration efforts would be the same as current management with a focus on a variety of prairie pothole wetlands, in particular temporary and seasonal types, many of which would complement shallow lake restoration by the Iowa DNR. More diverse habitat would allow for more diversity in wildlife, in particular, other grassland/wetland birds. Acquisition of the potholes would initially be the same as current management, working with partners to pursue perpetual protection of wetland and grassland of up to 112,000 acres in the PPR, but may be modified by new landscape-level planning tools and models developed (with more recent data/information).

Food plot use would be at levels that do not materially detract from breeding waterfowl. Additional public use opportunities that have been found to be appropriate and compatible would occur. Environmental education, interpretation, and outreach, however, would remain similar to current levels with more effort placed on distributing a consistent message for the entire district through coordination meetings, additional kiosks, trails, pull-offs, etc., and an

informational and regulatory brochure. Other "elements common to all alternatives" that are also a part of the preferred alternative include the following:

- The general management direction in this plan would apply to all district properties in which the Service has acquired an interest across the 35 counties.
- Existing WPAs or other district properties would be inventoried as necessary; any new techniques implemented would be monitored as necessary to allow for adaptive management; and research would be designed when and where it was needed to support and/or guide management.
- Since one of the goals of refuge/district planning is, "to provide a basis for adaptive management by monitoring progress, evaluating plan implementation, and updating refuge plans accordingly" (FWS, 2000), the adaptive management process would be utilized in the district.
- The portions of three WPAs—Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties)— currently closed by state regulation as waterfowl refuges will remain closed.
- After the *Federal Register* codification process (50 CFR) is completed in 2014, the following regulation would apply to the Service's fee title property within the Iowa WMD: "You may only use or possess approved nontoxic shot shells while in the field, including shot shells used for hunting wild turkey (see § 32.2(k))."
- The district would attempt to reduce its contribution to climate change as well as monitor the effects of climate change in the district.

Environmental Consequences

The effects on the environment from implementing the various alternatives were disclosed, analyzed, and summarized. Most effects from all alternatives will be beneficial, in particular, over the long-term at the landscape level. Converting cropland to perennial grassland, restoring wetlands, and improving habitat for wildlife are key benefits to the natural system as well as the services it provides. There will be some adverse effects as well; however, most will be generally short-lived and at a local scale from particular activities. Examples include prescribed fire, new kiosk, trail or pull-off construction, and increased visitor use. Some of the larger or more intense adverse effects include operational inputs contributing to climate change and reduction in farm income for some cooperative farmers/managers.

Implementation

The following objectives will guide management of the district over the next 15 years:

- Over the 15-year life of the CCP, increase the breeding population of Mallard by 450 pairs and Blue-winged Teal by 450 pairs on protected wetlands (permanent state and federal ownership) in the PPR of Iowa, and develop strategies, as part of the district's Inventory and Monitoring Plan, to set recruitment goals for these species in the PPR of Iowa.
- Over the 15-year life of the CCP, increase native grassland habitat by 7,500 acres with a plant diversity of 100 or more species, and provide more suitable habitat (in terms of

vegetative structure as will be defined in the district's Habitat Management Plan) in existing grassland for a wide variety of grassland-dependent birds within the Iowa WMD.

- At the end of the 15-year life of the CCP, perennial grassland, preferably native, is present on at least 97 percent of the uplands of the Iowa WMD.
- At the end of the 15-year life of the CCP a variety of wetland types (75 percent temporary and seasonal, 15 percent semi-permanent, and 10 percent permanent) exist across the Iowa WMD as representative of the pre-Euro-American settlement landscape.
- Over the 15-year life of the CCP, wetlands within the Iowa WMD are restored and managed to provide breeding waterfowl pair densities of at least 0.9 pairs per wetland acre.
- During the 15-year life of the CCP, food plots are present on no greater than three percent of the upland acres within the Iowa WMD.
- Over the 15-year life of the CCP, continue to pursue perpetual protection of wetland and grassland of up to 112,000 acres in the PPR of Iowa in collaboration with county, state, and other federal governments, conservation organizations, private businesses, and concerned citizens. Landscape-level planning tools (i.e., four-square mile survey, restorable wetlands layer, etc.) utilized by Iowa DNR and the Service's Habitat and Population Evaluation Team office will guide partners as to where strategic land acquisition should occur.
- Within 15 years of CCP approval, provide the infrastructure on three WPAs (such as trails, kiosks, pull-offs, etc.) and information (brochure, website, Facebook page, etc.) necessary for visitors to appreciate resources in the Iowa WMD, as defined in the Visitor Services Plan.
- Upon implementation of the CCP, allow uses required by regulation (hunting, recreational fishing, and recreational trapping—all in accordance with state regulations) as well as other public uses deemed appropriate and compatible across the Iowa WMD. Within four years of CCP approval, appropriate and compatible uses will be clearly articulated to the public through uniform signage, brochures, and Iowa DNR and Iowa WMD websites as identified in the Visitor Services Plan.

Chapter 1: Purpose of and Need for the Proposed Action

In this chapter:

The Process and the Plan

This Environmental Assessment (EA) documents the National Environmental Policy Act (NEPA) process for developing a Comprehensive Conservation Plan (CCP) for the Iowa Wetland Management District (WMD, district). The planning process to develop a CCP includes eight steps (U.S. Fish and Wildlife Service [FWS, Service], 2000):

1. Preplanning: Planning the Plan
2. Initiate Public Involvement and Scoping
3. Review Vision Statement and Goals and Determine Significant Issues
4. Develop and Analyze Alternatives, Including the Proposed Action
5. Prepare Draft Plan and NEPA Document
6. Prepare and Adopt Final Plan
7. Implement Plan, Monitor, and Evaluate
8. Review and Revise Plan

In general, scoping reveals issues that drive alternative ways of managing the district. Implementation of each of those alternative management styles (including the No Action Alternative) may have different effects on the physical, biological, and socio-economic environment. Analysis of these effects reveals the alternative that best:

- Achieves the district purposes, vision, and goals;
- Fulfills the National Wildlife Refuge System (NWRS, Refuge System) mission;
- Maintains and where appropriate restores ecological integrity of the district and the Refuge System (of which the district is a part);
- Addresses significant issues and mandates; and is
- Consistent with principles of sound fish and wildlife management.

This alternative is preferred and therefore constitutes the CCP. The CCP includes goals, objectives, and strategies for the district to guide overall management for the next 15 years. Monitoring and evaluation of implementing the plan provides a basis for eventual review and revision (as necessary). Public, partner, tribal, and other stakeholder input guides the planning

process and, in turn, the long-term management decisions of the district. The plan primarily applies to fee title properties; however, it also applies to all easement types within the district if legally allowed with the general exception of management direction regarding visitor services.

The Chapter

Chapter 1 provides introductory material that explains the purpose and need for the proposed action, provides background information about the district, and describes the decisions to be made from this EA.

The District

The Iowa WMD consists of scattered tracts of habitat (both wetland and upland grassland) known as Waterfowl Production Areas (WPAs). As of 2011, there are 75 WPAs in 18 counties in north-central Iowa totaling 24,712 acres in fee title and 575 acres in wetland and habitat easements (FWS, 2011a) (figure 1-1). While the Duck Stamp funds used to purchase the land are federal, the agency primarily responsible for restoration and management of the habitat is the Iowa Department of Natural Resources. Even though district acquisition has only occurred in 18 counties to date, a larger 35-county boundary is approved. This boundary follows the historic range of the poorly drained Prairie Pothole Region (PPR) (figure 1-2) in Iowa, an area known for its waterfowl production due to its prime "pothole" wetland habitat. Union Slough National Wildlife Refuge (NWR, refuge) in Titonka, Iowa administers the district, which also includes 18 tracts (434.6 acres) of Farm Service Agency (FSA) conservation easements on private land (figure 1-3). This plan was prepared with the intent that the strong partnership with the Iowa DNR will continue over the next 15 years.

Easements

The district currently inspects 44 wetland easements, one habitat easement, and 18 FSA conservation easements annually. These inspections include a visual search of aerial photography to look for tile drainage, ditches, filling, excavation, dumping, or any other violation. Field evaluations are also completed to make recommendations for habitat improvements and to discuss weed control and other general management issues. Letters are also sent to easement owners reminding them of its provisions and importance for waterfowl production.

Violations are typically addressed by Service law enforcement staff seeking voluntary compliance. Some of the most common easement violations in the district are crop encroachment, rock dumping, and excavation (consolidation drainage). Finally, the Partners for Fish and Wildlife Program biologist stationed at Union Slough NWR prioritizes habitat enhancement projects and works with easement owners to repair and replace dikes and other water control structures.

Figure 1-1: The Iowa WMD

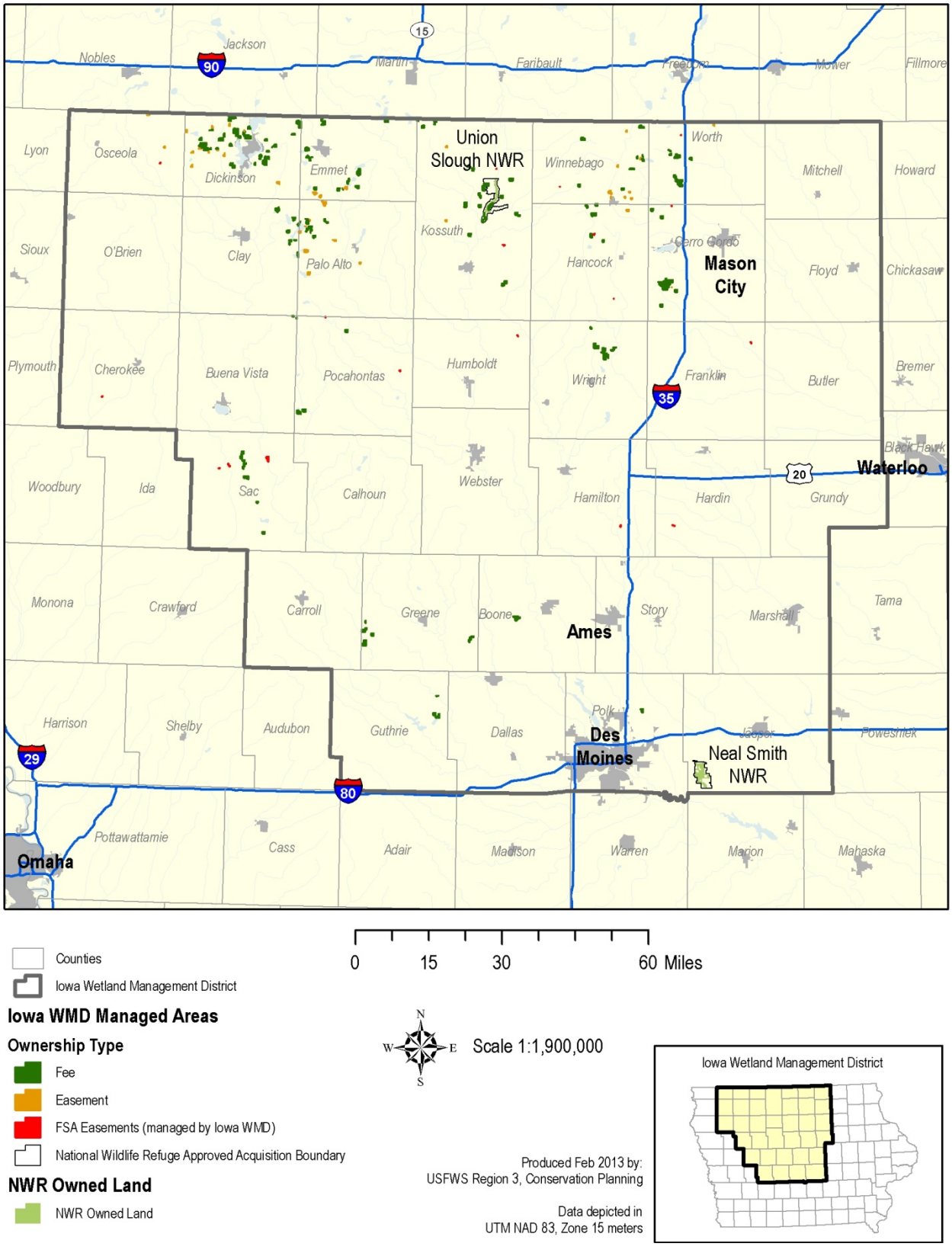
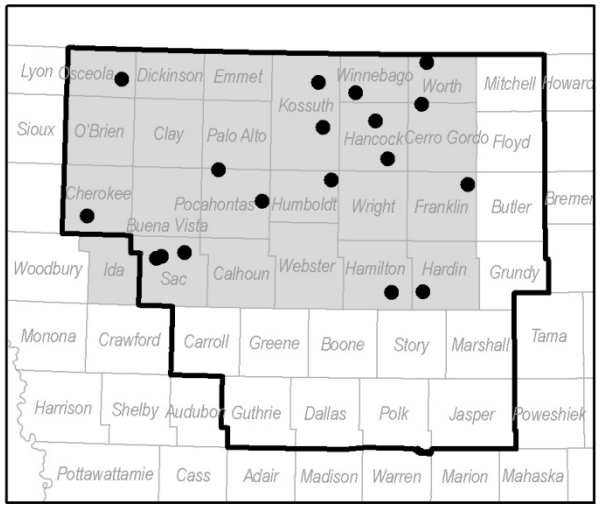


Figure 1-2: The Prairie Pothole Region

Figure 1-3: Farm Service Agency Conservation Easements (black dots) and Area of Responsibility (gray shading) Managed by the Iowa WMD



Proposed Action

The Service proposes to prepare and implement a CCP for the Iowa WMD. Per the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) (Public Law, 1997), the CCP must identify and describe the following:

- Purposes of the district
- Fish, wildlife, and plant populations, their habitats, and the archeological and cultural values found in the district
- Significant problems that may adversely affect wildlife populations and habitats and ways to correct or mitigate those problems
- Areas suitable for administrative sites or visitor facilities
- Opportunities for fish and wildlife-dependent recreation

More specifically per Service Manual direction (FWS, 2000), the CCP includes the following:

- A vision for the district, which is a concise statement of what the district should be, or what it is desired to be, based primarily upon the Refuge System mission and specific district purposes, and other mandates
- Goals, which are broad statements of desired future conditions
- Objectives, which are concise statements of what, how much, when, and where to achieve something and who is responsible for the work
- Strategies, which are specific actions, tools, techniques, etc. to meet the objectives

Finally, the CCP for the Iowa WMD focuses on the following aspects of management:

- Focal species group and life cycle
- Prolonged decline of grassland-dependent bird populations due to the decline of grassland habitat
- Upland habitat quality
- Focal wetland type
- Wetland quality
- Food plot use
- Decreasing purchasing power of existing funds and priority areas for acquisition
- District awareness and understanding
- Appropriate recreational opportunities

Purpose of and Need for the Proposed Action

The Improvement Act requires the development of a CCP for each refuge/district of the Refuge System. These CCPs are to be completed within 15 years of enactment of the Improvement Act, which is October 2012. No CCP currently exists for the district, so there is a need to develop one. The purpose then, of the proposed action is to determine the desired future conditions of the Iowa WMD and develop long-range (15-year) guidance and management direction to achieve the purposes of the district. This management direction will provide for the conservation of fish, wildlife, and plant resources and their related habitats, as well as opportunities for compatible wildlife-dependent recreational uses (FWS, 2000) especially in the

face of a changing climate (temperature and moisture changes may dramatically alter the entire PPR's available waterfowl habitat).

Per the Service Manual (FWS, 2000), the CCP for the district will not only describe the desired future conditions and management direction to achieve those conditions but will also:

- Help fulfill the NWRS Mission, which includes WMDs;
- Maintain and where appropriate restore the ecological integrity of the district and the greater Refuge System of which it is a part;
- Help achieve the goals of the National Wilderness Preservation System; and
- Meet other mandates, especially Secretarial Order 3289 Amendment 1: Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources of 2010.

Decisions to be Made

The Regional Director for the Service's Midwest Region (Region 3) will make the following two decisions based on this EA:

- Select an alternative to serve as the CCP, and provide long-term management direction for the district; and
- Determine if the selected alternative is a major federal action significantly affecting the quality of the human environment, thus requiring preparation of an Environmental Impact Statement.

The planning team recommends Alternative D: Breeding Waterfowl, the preferred alternative, to the Regional Director. The Draft CCP, as described in chapter 3 and appendix A, was developed for implementation based on this recommendation.

Chapter 2: District Planning Context

In this chapter:

This chapter describes the organizational, legal and policy context in regards to planning for and management of the Iowa Wetland Management District (WMD, district). This includes the U.S. Fish and Wildlife Service (FWS, Service) mission, the National Wildlife Refuge System (NWRS, Refuge System) mission, goals, and guiding principles as well as the history of the district and its purpose, vision, and goals.

Refuge System Planning Guidance

The U.S. Fish and Wildlife Service

The Iowa WMD is administered by the U.S. Fish and Wildlife Service, the primary federal agency responsible for conserving, protecting, and enhancing the Nation's fish and wildlife populations and their habitats. The Service oversees the enforcement of federal wildlife laws, management and protection of migratory bird populations, restoration of nationally significant fisheries, administration of the Endangered Species Act, restoration of wildlife habitat such as wetlands, collaboration with international conservation efforts, and the distribution of conservation funding to states, territories, and tribes. Through its conservation work, the Service also provides a healthy environment in which Americans can engage in outdoor activities. Additionally, as one of three land managing agencies in the Department of the Interior (DOI), the Service is responsible for the Nation's Refuge System.

FWS Mission

Working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

The National Wildlife Refuge System

The Refuge System was founded in 1903 when President Theodore Roosevelt designated a three-acre island off the Florida coast, Pelican Island, as a sanctuary for colonial nesting birds. Today, the Refuge System has grown to a network of 560 national wildlife refuges (NWR, refuge), 38 districts, and 49 coordination areas covering over 150 million acres of public lands and waters. Over 50 percent of these lands (over 76 million acres) are contained within Alaska's 16 refuges, with the remainder distributed throughout the other 49 states and U.S. territories. Since 2006, Marine National Monuments have been added to the Refuge System, bringing over 50 million additional acres in the Pacific Ocean under federal protection and conservation management.

The Refuge System is the world's largest collection of lands and waters specifically designated and managed for fish and wildlife. Overall, it provides habitat for more than 700 species of birds, 220 species of mammals, 250 reptile and amphibian species, 200 species of fish, and more

than 280 threatened or endangered plants and animals. As a result of international treaties for migratory bird conservation and related legislation (e.g., Migratory Bird Conservation Act of 1929), many refuges have been established to protect migratory waterfowl and their migration flyways that extend from nesting grounds in the north to wintering areas in the south. Refuges also play a vital role in preserving threatened and endangered species.

Refuges also provide important recreation and education opportunities for visitors. When public uses are deemed appropriate and compatible with wildlife and habitat conservation, they are places where people can enjoy hunting, fishing, wildlife observation, photography, environmental education, environmental interpretation, and other recreational activities. Many refuges have visitor centers, wildlife trails, automobile tours, and environmental education programs. Nationwide, over 41 million people visit national wildlife refuges annually.

NWRS Mission

To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

NWRS Goals

Revised goals for the Refuge System were adopted on July 26, 2006 and incorporated into Part 601, chapter 1, (601 FW1) of the Service Manual (FWS, 2006). The goals are:

- Conserve a diversity of fish, wildlife, and plants and their habitats, including species that are endangered or threatened with becoming endangered;
- Develop and maintain a network of habitats for migratory birds, anadromous and interjurisdictional fish, and marine mammal populations that is strategically distributed and carefully managed to meet important life history needs of these species across their ranges;
- Conserve those ecosystems, plant communities, wetlands of national or international significance, and landscapes and seascapes that are unique, rare, declining, or underrepresented in existing protection efforts;
- Provide and enhance opportunities to participate in compatible wildlife-dependent recreation (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); and
- Foster understanding and instill appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.

NWRS Guiding Principles

- We are land stewards, guided by Aldo Leopold's teachings that land is a community of life and that love and respect for the land is an extension of ethics. We seek to reflect that land ethic in our stewardship and to instill it in others;
- Wild lands and the perpetuation of diverse and abundant wildlife are essential to the quality of the American life;

- We are public servants. We owe our employers, the American people, hard work, integrity, fairness, and a voice in the protection of their trust resources;
- Management, ranging from preservation to active manipulation of habitats and populations, is necessary to achieve Refuge System and Service missions;
- Wildlife-dependent uses involving hunting, fishing, wildlife observation, photography, interpretation, and education, when compatible, are legitimate and appropriate uses of the Refuge System;
- Partnerships with those who want to help us meet our mission are welcome and indeed essential;
- Employees are our most valuable resource. They are respected and deserve an empowering, mentoring, and caring work environment;
- We respect the rights, beliefs, and opinions of our neighbors; and
- We are a science-based organization. We subscribe to the highest standards of scientific integrity and reflect this commitment in the design, delivery and evaluation of all of our work.

Ecological Integrity

The National Wildlife Refuge System Improvement Act of 1997 directs the Service to ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans. In response to this direction, the Service used a public process to develop policy that provides specific guidance to maintain biological integrity, diversity, and environmental health, collectively referred to as ecological integrity (FWS, 2001). The policy contains a process to evaluate each refuge/district and identify the best management direction to prevent degradation of environmental conditions; and where appropriate and in concert with refuge/district purposes and the Refuge System mission, restore lost or severely degraded components of ecological integrity as compared to those found under historic conditions. The ecological integrity components include the following:

- **Biological Integrity**—Biotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shape genomes, organisms, and communities.
- **Biological Diversity**—The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and communities and ecosystems in which they occur.
- **Environmental Health**—Composition, structure, and functioning of soil, water, air, and other abiotic features comparable with historic conditions, including the natural abiotic processes that shape the environment.
- **Historic Conditions**—Composition, structure, and functioning of ecosystems resulting from natural processes that we believe, based on sound professional judgment, were present prior to substantial human-related changes to the landscape.

Maintaining the ecological integrity of a WMD is particularly challenging given that Waterfowl Production Areas (WPAs), although locally large complexes, are rather small and isolated within their larger landscape. For Iowa WMD, like many others, much of the larger landscape is in

heavy agricultural use. Therefore, WPAs are greatly influenced by the movement of sediment, nutrients, and agricultural chemicals from adjacent crop fields. This has led to decreased plant diversity and openings for many invasive plants to become established. These invasive plants often form dense stands and crowd out native vegetation.

Furthermore, water quality in district wetlands has deteriorated due to sedimentation and eutrophication caused by runoff from neighboring farm fields. According to an unpublished report from a 1995 U. S. Geological Survey study at Union Slough NWR, the mean sediment increase in refuge pools from 1938 to 1995 was 2.62 feet, or more than 0.5 inches per year. In addition to sedimentation problems, a contaminant study conducted at Union Slough NWR from 1995 to 1997 found numerous wetland quality issues including: nitrate loading, elevated levels of ammonia, low dissolved oxygen levels, limited benthic macroinvertebrate diversity, limited wetland plant diversity, massive phytoplankton blooms, and elevated selenium levels (Coffey, 2000). The source of many of these problems is the effluent of drainage tiles that dump into wetlands. The tile introduces a pathway for excess sediment, nutrients, and pesticides to enter the wetlands. The influence of consolidated water from drainage tile in wetlands can effectively interrupt the important and natural wet/dry cycle of Prairie Pothole Region (PPR) wetlands. The combination of more stable water conditions and the introduction of more sediment, nutrients, and pesticides have contributed to dense cattail stands in shallow water areas and wet meadow zones that are dominated by reed canarygrass. Collaborating with the Iowa DNR and others, working within watersheds, and building complexes through acquisition rather than small-scattered tracts all help maintain the ecological integrity of the district within its landscape.

Cooperative Farming

The Service has utilized farming on district land as a tool in restoring native habitats, controlling noxious weeds, and providing food for migratory birds and resident wildlife. Typically, farming programs involve both Department of Natural Resources (DNR) staff and equipment or a third party, often referred to as a “cooperator,” who farms under the terms and conditions of a cooperative habitat management agreement. The DNR develops and manages the agreements to establish how long farming is allowed on a specific tract, the crops and crop rotation that will be used, the process of selecting cooperators, and payment rates. For the past several years, the Service has been reducing the number of acres farmed on Refuge System land. Farming policy and changes in agricultural practices, such as the increased use of genetically-modified crops, prompted a need to reevaluate farming on Service land in the Midwest Region.

In 2011, the Service’s Midwest Region completed an Environmental Assessment (EA) for row crop farming and the use of genetically modified glyphosate tolerant (GMGT) corn and soybeans on refuge/district land (FWS, 2011c). Under the selected alternative, beginning in calendar year 2012, the use of GMGT corn and soybeans on Refuge System land in the Midwest Region would continue only for the purpose of habitat restoration. According to the EA, the use of GMGT corn and soybeans would be limited to five years on any individual tract being prepared for habitat restoration. Farming could continue to be used as a management tool for achieving multiple objectives; however, it would be limited to non-GMGT crops for objectives other than habitat restoration. Multiple objectives include but are not limited to the following:

- Habitat restoration
- Habitat management
- Supplemental food for wildlife

- Providing lure crops on public lands to reduce wildlife depredation on private lands
- Enhancing opportunities to hunt, view, and photograph wildlife for the visiting public

Similarly, the Service's ecological integrity policy specifies that GMGT crops cannot be used on Refuge System land unless they are "essential to accomplishing refuge [district] purposes." Habitat restoration is a core objective of most refuges (districts) in achieving their purpose and in some circumstances, the use of GMGT crops could be essential. However, habitat management, supplemental food, and wildlife viewing objectives can more readily be accomplished without the use of GMGT seeds, and thus, their use is not likely essential.

Furthermore, refuge and district managers are required to demonstrate that their proposed use of GMGT crops is essential for habitat restoration. The Service has established an approval process for the use of GMGT corn and soybeans that includes completion of an Eligibility Questionnaire for Genetically Modified Crops. When managers propose to use GMGT corn and soybeans, they are required to complete this questionnaire as part of the approval process.

Legal and Policy Compliance

Laws, Executive Orders, and DOI and Service policies guide administration of refuges (including WMDs). A list of pertinent statutes and policy guidance are in appendix D.

Wilderness Review

Refuge/district planning policy mandates that wilderness reviews be conducted through the comprehensive conservation planning process (FWS, 2000). The wilderness review process consists of three phases: inventory, study, and recommendation. In the inventory phase, Service-owned lands and waters within the refuge or district that are not currently designated wilderness are analyzed for areas that meet the criteria for wilderness established by Congress. The criteria are size, naturalness, opportunities for solitude or primitive recreation, and supplemental values. Areas that meet the criteria become Wilderness Study Areas (WSAs). In the study phase, a range of management alternatives are developed and evaluated for the WSAs to determine if they are suitable for recommendation for inclusion in the National Wilderness Preservation System. In the recommendation phase, the suitable recommendations are forwarded in a Wilderness Study Report that moves from the Director through the Secretary and the President to Congress.

No lands within the Iowa WMD meet the criteria for wilderness established by Congress and described in Service policy (FWS, 2008b). The Iowa WMD does not contain 5,000 contiguous acres of roadless, natural lands, nor does it possess any units of sufficient size to make their preservation practicable as wilderness. District lands and waters have been substantially altered by humans, especially by agriculture and residential and industrial developments.

District Management Guidance

General guidance for managing the district comes from several sources including its purposes, the Refuge System mission, Service policies, and other laws. The vision and goals developed during this planning process will also guide management of the district.

Brief History of District Establishment and Acquisition

The Iowa WMD, like many other WMDs, was established due to the success of the Small Wetlands Program (figure 2-1). To help permanently protect habitat for waterfowl, the Small Wetlands Program was officially created in 1958, with an amendment to the 1934 Migratory Bird Hunting Stamp Act (also known as the Duck Stamp Act). This amendment allowed proceeds from the sale of federal Duck Stamps to be used to acquire WPAs in any state with the Director's (or Director's appointee) approval (figure 2-2).

In 1962, to help effectively manage the increasing number of WPAs acquired through the Small Wetlands Program, the Service created an administrative organization called a wetland management district (WMD). WMDs were established not only to manage all the WPAs in a multi-county area, but also to work closely with the private landowners, government and nongovernment organizations, businesses, and other federal agencies in their districts to improve wildlife habitat. Uniquely, however, in Iowa, with the signing of a Memorandum of Understanding (MOU) in 1978, it was decided that while the Service would provide federal Duck Stamp funds for land acquisitions, the Iowa DNR would supply the personnel necessary to restore and manage those acquisitions (WPAs). The initial approval from the state limited acquisition of land to 17 counties in north-central and northwest Iowa. This approval established the Iowa WMD, and in 1979 the first tract of land (WPA), known as West Swan Marsh, was purchased in Emmet County. A second tract, also in Emmet County, was purchased in 1980. Yearly acquisition, however, did not resume in the district until eight years later.

In 1988, through the Prairie Pothole Joint Venture (PPJV) Program, the Iowa DNR established a priority area within the state to focus the use of Small Wetlands Program funds. This 35-county area in north-central Iowa generally follows the geologic area referred to as the Des Moines Lobe. This represents the southernmost advancement of the glaciers that shaped the prairie pothole landform in Iowa. Both the approval for acquisition from the state and the MOU with the Iowa DNR were revised to include these 35 counties.

In 2000, the MOU was updated again, and while the 35-county acquisition area remained the same, priority was given to the wetland complexes identified in "Identification of potential wetland complex restorations in the Iowa Prairie Pothole Region" (Iowa DNR, 1998). The Iowa DNR revised this plan in 1999 and 2002, and then in 2007, it completed a modeling exercise to revise focus areas for acquisition (figure 2-3).

Between 2000 and 2010, the Service's Habitat and Population Evaluation Team (HAPET) also developed and completed three revisions of thunderstorm maps utilizing the National Wetlands Inventory (NWI) data to help identify priority sites for acquisition and restoration. Most recently, in 2010, the Plains and Prairie Potholes Landscape Conservation Cooperative (LCC) began a wetland assessment and restorable wetland inventory to help refine priority acquisition areas. This project used Light Detection and Ranging (LiDAR) data to find depressions and substituted the NWI wherever available for existing water and wetlands to produce a layer of depressions where, if flooded, wetlands may be established (figure 2-4). Currently, the Iowa WMD consists of 75 WPAs totaling just over 25,000 acres (including fee title and both wetland and habitat easements) in 18 counties. Finally, a revision to the MOU was completed in 2012 during the Comprehensive Conservation Plan (CCP) planning process (appendix J).

Figure 2-1: Significant Events in the Establishment of the Iowa WMD

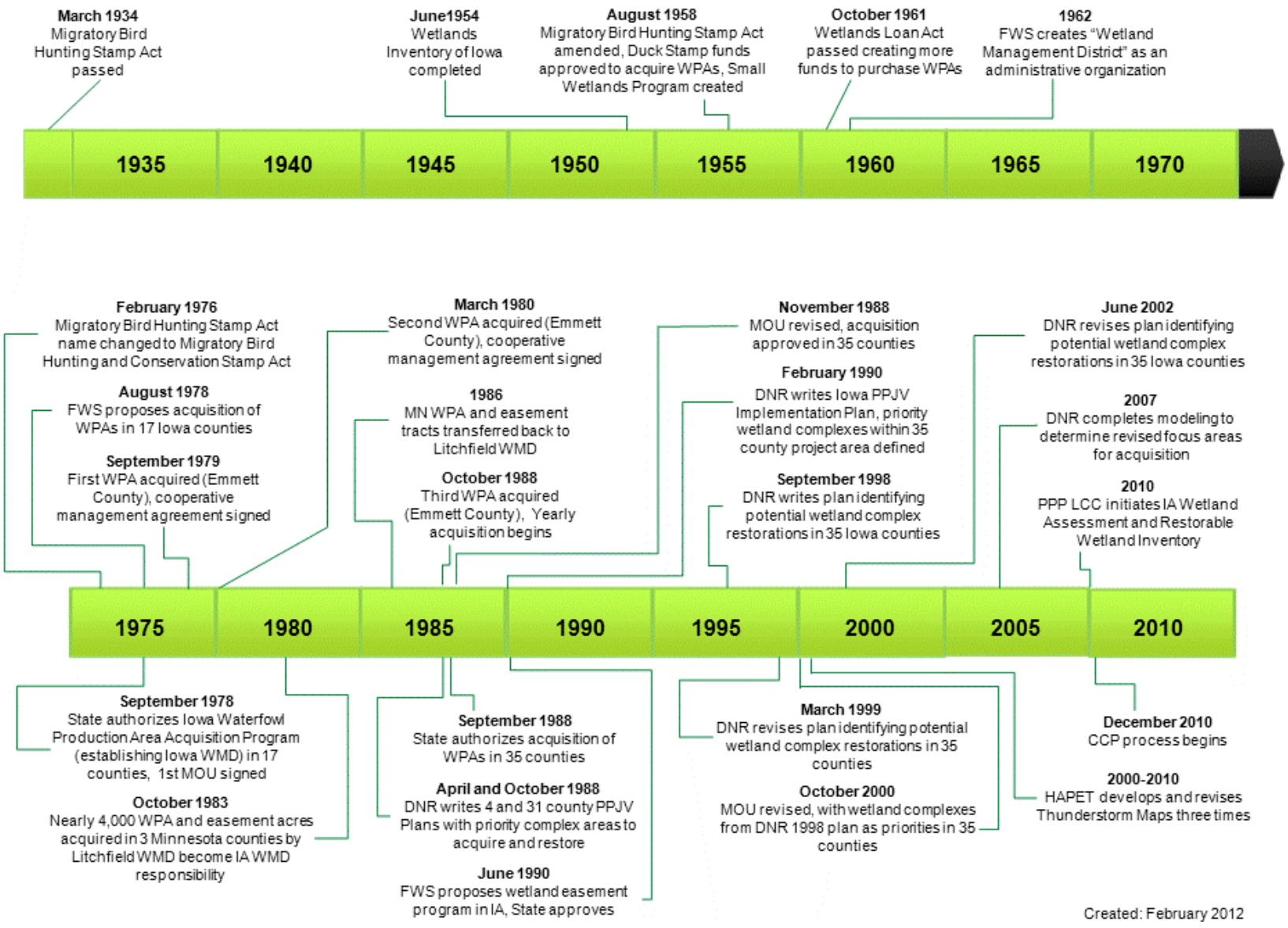
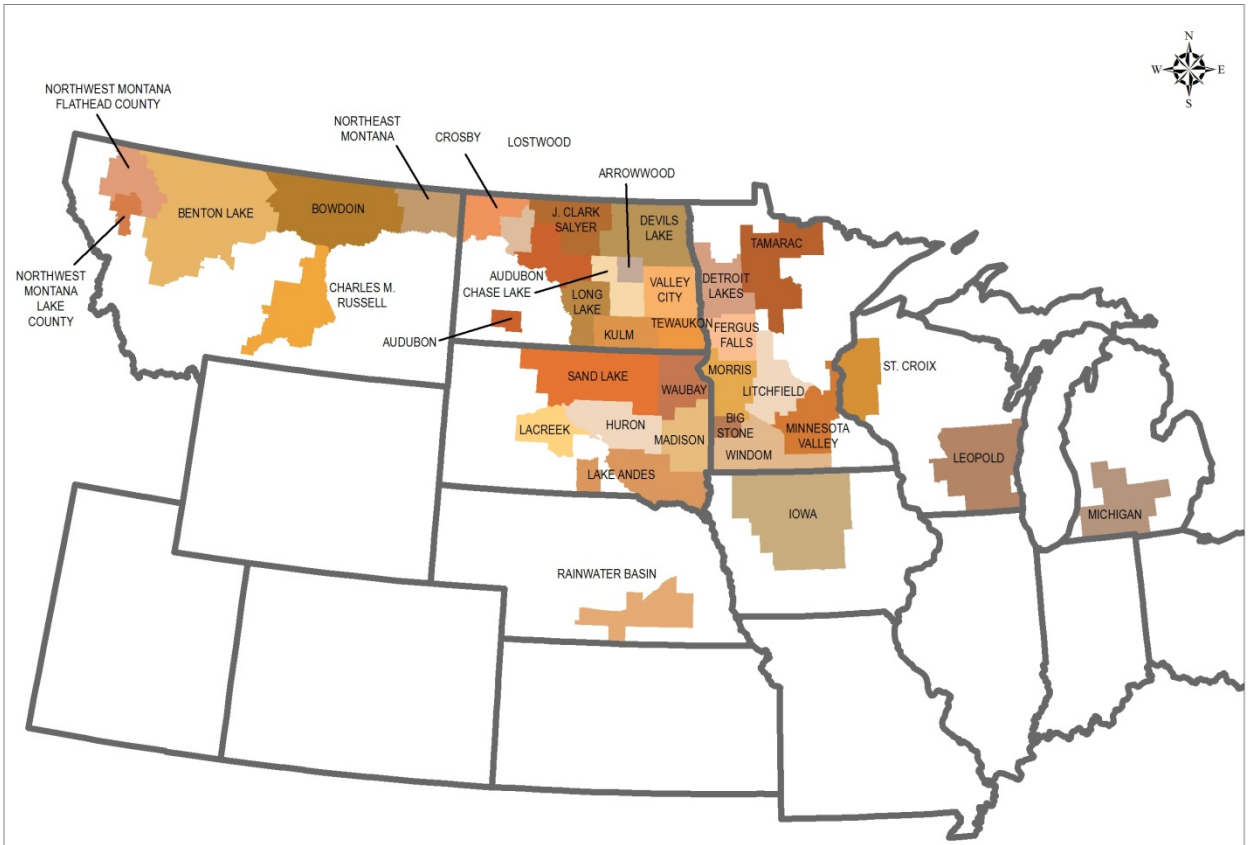


Figure 2-2: WMDs Established Under the Small Wetlands Program



Wetland Management Districts are units of the National Wildlife Refuge System comprised of counties in which the Service is acquiring wetlands and grasslands that are managed as Waterfowl Production Areas (WPA).

District Purposes

Iowa WMD is part of a national network of lands administered by the Service as the Refuge System. Each unit of the Refuge System has one or more purposes specified in or derived from the legal instrument that established, authorized, or expanded it. The first obligation is to fulfill and carry out the purposes of each refuge (or district) (FWS, 2006). The purposes for Iowa WMD are based upon its land acquisition authority, which is, the:

> Migratory Bird Hunting and Conservation Stamp Act of 1934
>
> . . . as Waterfowl Production Areas subject to ". . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929]
>
> . . . except the inviolate sanctuary provisions . . ." 16 U.S.C. § 718(c)
>
> . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

Figure 2-3: Priority Wetland Complexes for Acquisition and Restoration in the Iowa WMD

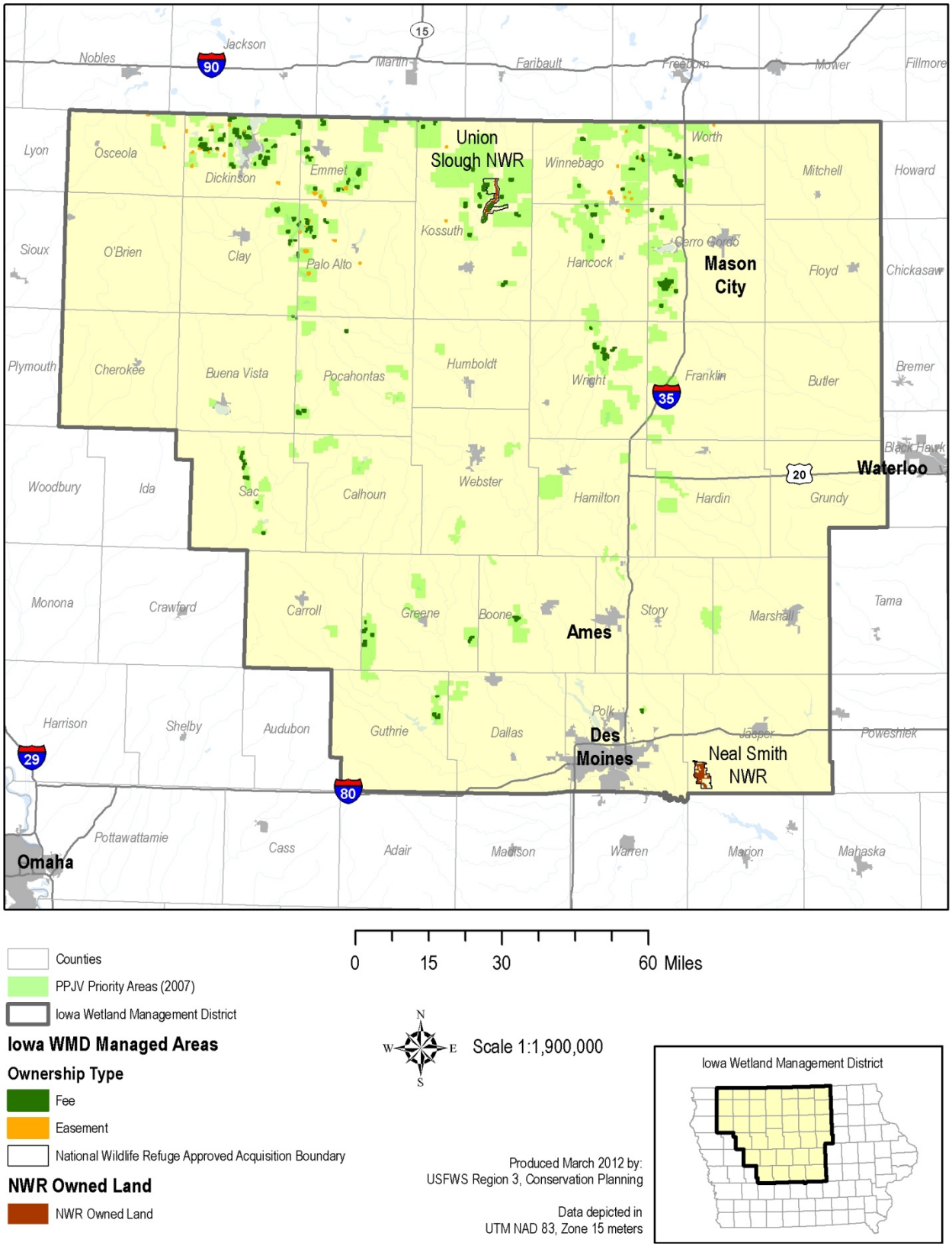
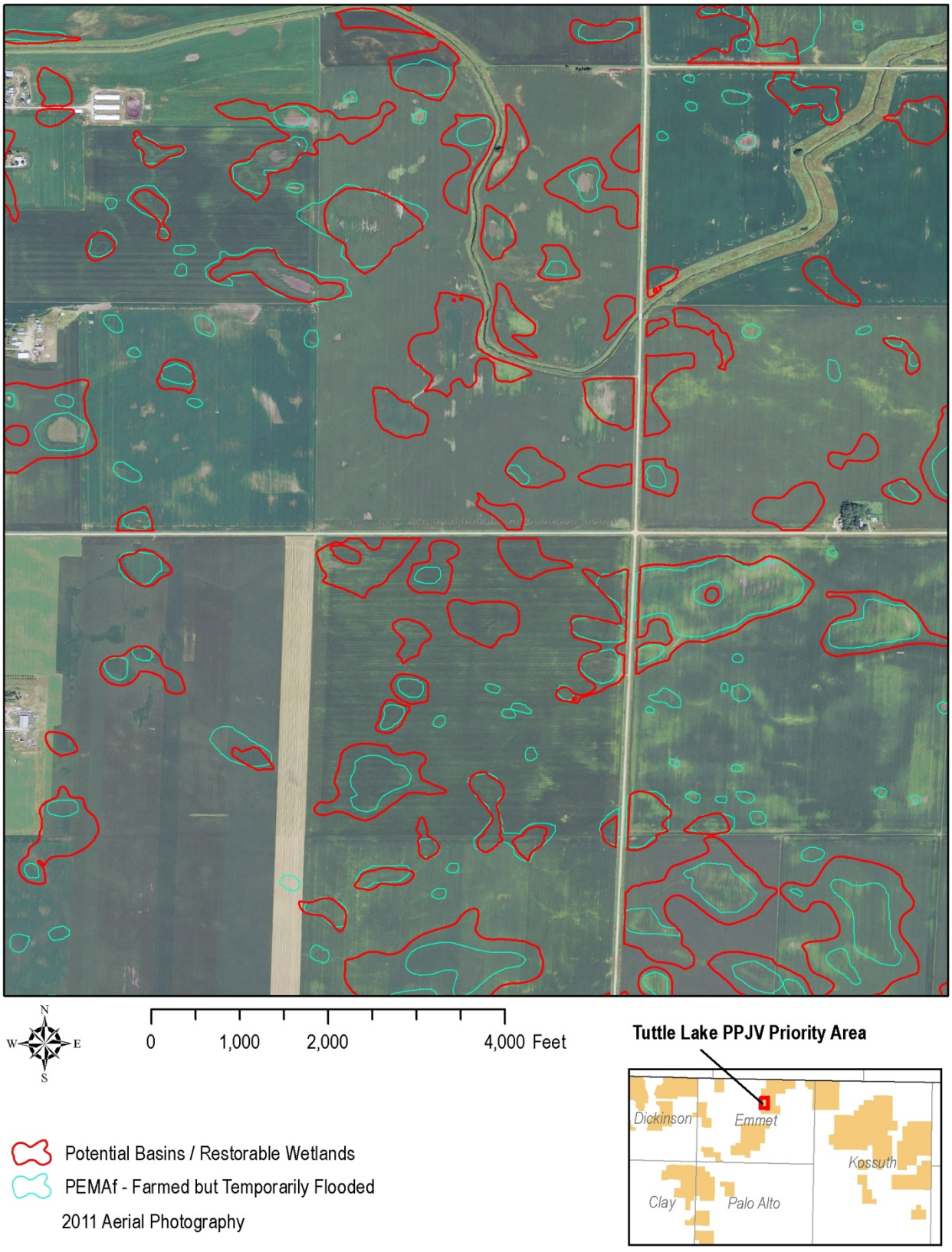


Figure 2-4: Existing Basins in the Iowa WMD for Potential Wetland Restoration (Example)



*Restorable Wetlands Layer Courtesy Iowa DNR

District Vision Statement

The vision provides a concise statement of what the district is, or what it is desired to be, based primarily upon the Refuge System mission and specific district purposes and other mandates. The Iowa WMD vision is:

> *Waterfowl and other winged wildlife herald the richness of resilient, productive wetlands and tallgrass prairies, bringing appreciation and satisfaction to visitors, the rewards of enduring commitments across ownerships throughout the Prairie Pothole Region of Iowa.*

District Goals

The goals are broad statements that describe the desired future conditions of the district.

Goal 1: Wildlife

In partnership with the Iowa DNR and others, restore a natural diversity and abundance of waterfowl, migratory birds, and other native fauna within the Iowa WMD.

Goal 2: Habitat

In partnership with the Iowa DNR and others, conserve, restore, and expand grassland and wetland habitat managing for a natural diversity of native flora within the Iowa WMD.

Goal 3: People

In partnership with the Iowa DNR and others, promote understanding, appreciation, and support for the Iowa WMD as well as stewardship and understanding of the southern Prairie Pothole Region and its native ecosystems to visitors and local residents.

Relationship to Other Conservation Initiatives

Migratory Bird Conservation Initiatives

Several migratory bird conservation plans have been published over the last decade that can be used to help guide management decisions for the district. Bird conservation planning efforts have evolved from a largely local, site-based orientation to a regional, even intercontinental, landscape-oriented perspective. Several transnational migratory bird conservation initiatives have emerged to help guide the planning and implementation process. The one regional plan most relevant to the majority of the district is the Prairie Pothole Joint Venture Implementation Plan (http://www.ppjv.org/) (figure 2-5). This plan is a product of stepping-down and incorporating all other larger-scale (North American, United States, international, etc.) species and other management plans, in particular the North American Waterfowl Management Plan.

The PPJV of the North American Waterfowl Management Plan is an effort by government agencies and conservation organizations to protect and restore waterfowl habitat within the PPR of the United States and Canada. Although initially targeted at waterfowl species, emphasis within the PPJV has been extended to nongame species as well. Research sponsored by Iowa

DNR and Iowa State University has demonstrated that a variety of birds and other species of greatest conservation need have successfully re-colonized the restored habitats (Zohrer, 2005).

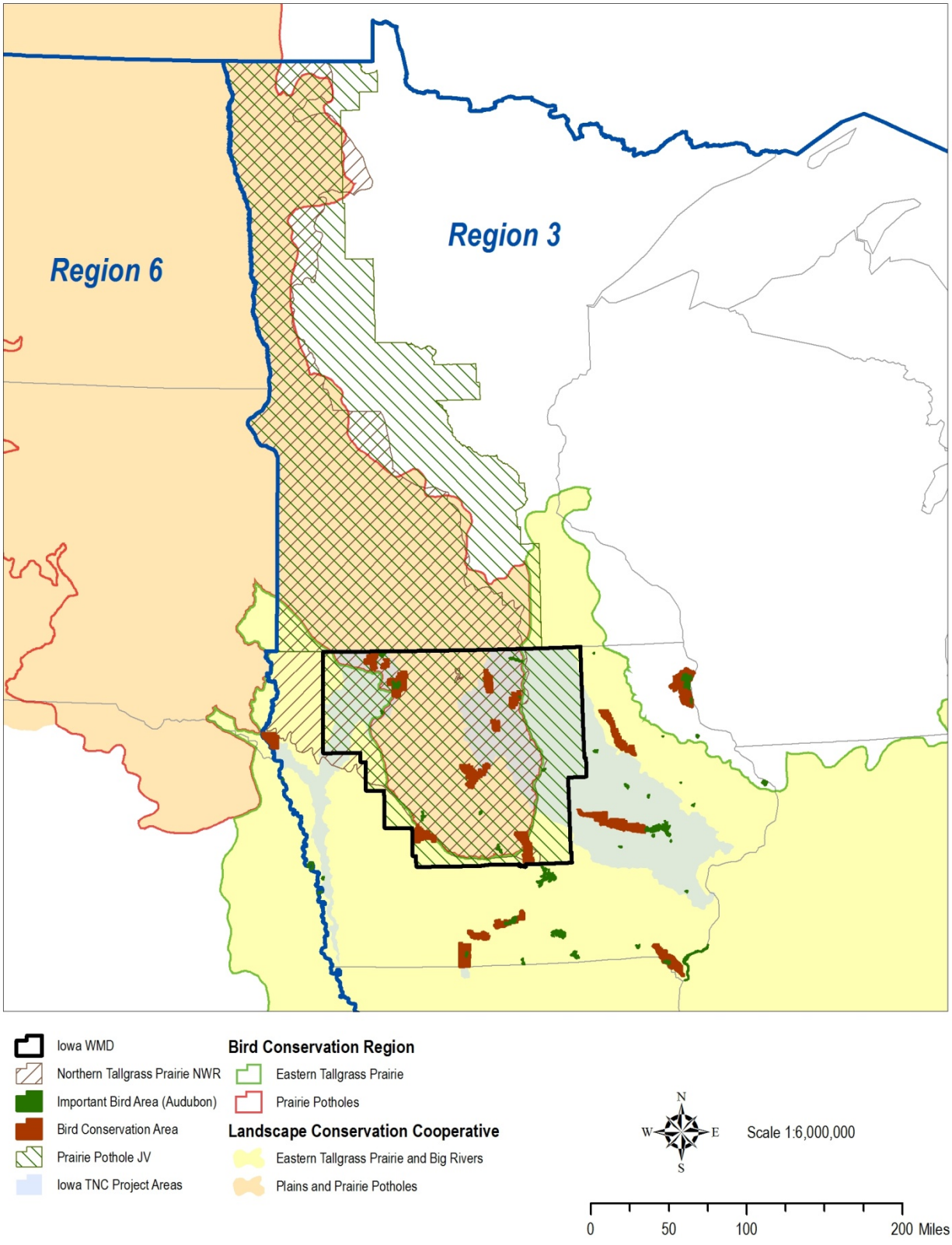
More specifically, the district lies primarily within the Prairie Potholes Bird Conservation Region (Bird Conservation Region [BCR] 11) (figure 2-5). This BCR is a glaciated area of mixed-grass prairie in the west and tallgrass prairie in the east. This is the most important waterfowl production area on the North American continent, despite extensive wetland drainage and tillage of native grasslands. Breeding dabbling duck density may exceed 100 pairs per square mile in some areas during years with favorable wetland conditions. The region comprises the core of the breeding range of most dabbling duck and several diving duck species, as well as providing critical breeding and migration habitat for over 200 other bird species, including such priority species as Franklin's Gull (*Leucophaeus pipixcan*), Yellow Rail (*Coturnicops noveboracensis*), and Piping Plover (*Charadrius melodus*). Baird's Sparrow (*Ammodramus bairdii*), Sprague's Pipit (*Anthus spragueii*), Chestnut-collared Longspur (*Calcarius ornatus*), Wilson's Phalarope (*Phalaropus tricolor*), Marbled Godwit (*Limosa fedoa*), and American Avocet (*Recurvirostra americana*) are among the many priority non-waterfowl species breeding in this region. Wetland areas also provide key spring migration sites for Hudsonian Godwit (*Limosa haemastica*), American Golden-Plover (*Pluvialis dominica*), White-rumped Sandpiper (*Calidris fuscicollis*), and Buff-breasted Sandpiper (*Tryngites subruficollis*). Continued wetland degradation and fragmentation of remaining grasslands threaten future suitability of the PPR for all of these birds.

BCR 11 contains 27 bird species listed as "Of Conservation Concern" by the Service (FWS, 2008a). This list identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act. The overall goal of this report is to identify the migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent the Service's highest conservation priorities. The Service based its 2008 list of Birds of Conservation Concern primarily on the landbird, shorebird, and waterbird status assessment scores. Some of the species on this list include Horned Grebe (*Podiceps auritus*), Least Bittern (*Ixobrychus exilis*), Swainson's Hawk (*Buteo swainsoni*), Mountain Plover (*Charadrius montanus*), Long-billed Curlew (*Numenius americanus*), Short-billed Dowitcher (*Limnodromus griseus*), Short-eared Owl (*Asio flammeus*), Grasshopper Sparrow (*Ammodramus savannarum*) and Dickcissel (*Spiza americana*).

Strategic Habitat Conservation

Strategic habitat conservation (SHC) is a science-based approach to conservation focused on providing landscapes capable of sustaining trust species populations at objective levels. This approach is founded on an adaptive, iterative process of biological planning, conservation design, conservation delivery, monitoring, and research. SHC is an application of the scientific method and adaptive management to conservation at multiple spatial scales. This strategic conservation approach will include all Service programs and address both habitat and non-habitat factors limiting fish and wildlife populations.

Figure 2-5: Conservation Initiatives Relevant to the Iowa WMD



As a leader in fish and wildlife and habitat conservation and management, the Service is embracing a framework designed to maximize agency efficiency and increase on the ground conservation impacts. SHC enables the Service to:

- Respond to new environmental challenges;
- Advance opportunities with new and existing partners;
- Utilize science-based tools and resources to plan and evaluate conservation efforts; and
- Continue to ensure conservation successes locally, while advancing landscape objectives.

The Service mission can be met at a landscape scale, especially in the face of climate change, by:

- Fully utilizing existing technology such as Geographic Information System (GIS);
- Becoming trained in better decision making through the Structured Decision Making process;
- Reaching out to even more partners that have the necessary expertise to advance knowledge of the resource and its needs at multiple spatial and temporal scales; and
- Being diligent and transparent in planning and decision making processes.

SHC Guiding Principles

- Habitat conservation is simply a means to attain the Service's true goal—the conservation of populations and ecological functions that sustain them.
- Defining measurable population objectives is a key component of SHC, at any scale.
- Biological Planning must use the best scientific information available, both as a body of knowledge and a method of learning. Service understanding of ecological conditions is never perfect. An essential element of SHC is managing uncertainty through an iterative cycle of planning, doing, and evaluating.
- Management actions, decisions, and recommendations must be defensible and explicit about the nature and magnitude of potential errors.
- Conservation strategies consist of dynamic suites of objectives, tactics, and tools that change as new information enters the SHC cycle.
- Partnerships are essential, both for management and for developing conservation strategies.

Plains and Prairie Pothole Landscape Conservation Cooperative

The Service, with support and cooperation from the U.S. Geological Survey, has developed a national geographic framework for "putting science in the right places" to conserve our Nation's fish and wildlife resources. Just as flyways provided an effective spatial frame of reference to build capacity and partnerships for international, national, state, and local waterfowl conservation, the national geographic framework provides a continental platform upon which the Service can work with state and other partners to connect project- and site-specific efforts to

larger biological goals and outcomes. By providing visual context for conservation at "landscape" scales—the entire range of a priority species or suite of species—the framework helps ensure that resource managers have the information and decision making tools they need to conserve fish, wildlife, plants, and their habitats in the most efficient and effective way possible.

The Service is using the framework as a basis for locating LCCs. Facilitated by DOI as part of its collaborative, science-based response to climate change, LCCs complement and build upon existing science and conservation efforts—such as fish habitat partnerships and migratory bird joint ventures—as well as water resources, land, and cultural partnerships. Iowa WMD is primarily within the boundary of the Plains and Prairie Pothole LCC, which is one of a network of partnerships working in unison to ensure the sustainability of America's land, water, wildlife, and cultural resources.

The Plains and Prairie Potholes LCC is dedicated to the conservation of a landscape unparalleled in importance to a vast array of unique species whose populations are in steep decline. The LCC boundary transcends existing Service regional boundaries and the international border with Canada (figure 2-5). Currently, the Service and its partners are working to develop and apply the scientific tools necessary to determine how climate change, coupled with existing stressors such as the conversion of native prairie for agricultural purposes may affect the health and productivity of shared natural resources in this landscape. The actions of the Plains and Prairie Pothole LCC will support and supplement state wildlife action plans and enhance protection for fish and wildlife resources in the region.

Region 3 Fish and Wildlife Conservation Priorities

Every species is important; however, the number of species in need of attention exceeds the resources of the Service. To focus effort effectively, Region 3 of the Service compiled a list of Resource Conservation Priorities in 2002. The list includes:

- All federally listed threatened and endangered species and proposed and candidate species that occur in the region;
- Migratory bird species derived from Service-wide and international conservation planning efforts; and
- Rare and declining terrestrial and aquatic plants and animals that represent an abbreviation of the Endangered Species Program's preliminary draft "Species of Concern" list for the region.

Climate Change Planning

U.S. Fish and Wildlife Service

The Service's *Rising to the Urgent Challenge: Strategic Plan for Responding to Accelerating Climate Change* (FWS, 2010) establishes a basic framework within which the Service will work as part of the larger conservation community to help ensure the sustainability of fish, wildlife, plants, and habitats in the face of accelerating climate change. It was developed in an effort to rise up and respond to, as well as in recognition of, what is perhaps the 21st century's largest stressor on fish, wildlife, and plants: climate change. Part of the plan's primary purpose is to lay out a vision for accomplishing the Service mission to "work with others to conserve, protect, and

enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people" in the face of accelerating climate change. In this plan, a commitment to the Service's vision is expressed through strategic goals and objectives that must be accomplished to sustain fish and wildlife nationally and internationally. A 5-Year Action Plan for Implementing the Climate Change Strategic Plan identifies specific actions that will lead to the accomplishment of these goals and objectives. The goals and objectives most relevant to this planning effort include the following:

- Goal 2: Develop long-term capacity for biological planning and conservation design and apply it to drive conservation at broad, landscape scales.
- Objective 2.1: Access regional climate science and modeling expertise through regional climate science partnerships.
- Objective 2.2: Develop landscape conservation cooperatives to acquire biological planning and conservation design expertise.
- Objective 2.3: Develop expertise in and conduct adaptation planning for key species and habitats.
- Objective 2.4: Incorporate climate change in service activities and decisions.
- Objective 2.5: Provide requested support to state and tribal managers to address climate change issues that affect fish and wildlife service trust resources.
- Objective 2.6: Evaluate fish and wildlife service laws, regulations, and policies to identify barriers to and opportunities for successful implementation of climate change actions.

The *Conserving the Future: Wildlife Refuges and the Next Generation* (FWS, 2011b) document is the Service's bold, new vision for the Refuge System. This 21st-century strategic vision for the Refuge System acknowledges the broad social, political, and economic changes that have made habitat conservation more challenging since the agency last set comprehensive goals in 1999. In the intervening 12 years, the new vision states the Nation's population has grown "larger and more diverse . . . and the landscape for conservation has changed—there is less undeveloped land, more invasive species, and we are experiencing the impacts of a changing climate." The document includes 24 recommendations to guide the future of the Refuge System. The recommendation most relevant to this planning effort concerning climate change is:

> Recommendation 2: Develop a climate change implementation plan for the Refuge System that dovetails with other conservation partners' climate change action plans and specifically provides guidance for conducting vulnerability assessments of climate change impacts to refuge/district habitats and species as well as direction for innovation in the reduction of emissions and improved energy efficiency on federal lands.

State of Iowa

The Iowa General Assembly enacted legislation in 2007 and 2008 to create the Iowa Climate Change Advisory Council (ICCAC). The ICCAC conducted most of its business from late 2007 through the end of 2008, concluding with a final report (ICCAC, 2008) to the governor and legislature. The focus of that report was the need to reduce greenhouse gas (GHG) emissions in the state. Some progress has been made, but much work remains to be done to reverse the general trend of increasing Iowa GHG emissions during the past two decades.

Following this report, the Iowa Legislature requested additional information on the ramifications of climate change for Iowans, and it enacted a new bill in 2009 (amendment). The amendment set in motion a review of climate change impacts and policies for the State of Iowa. The final product was another report of findings and recommendations to the governor and general assembly by the Iowa Climate Change Impacts Committee (ICCIC). The major requirements of the study included the following:

- An initial review of available climate change impacts studies relevant to Iowa
- A summary of available data on recent changes in relevant climate conditions
- Identification of climate change impacts issues, which require further research and an estimate of their cost
- Identification of important public policy issues relevant to climate change impacts

Therefore, the *Climate Change Impacts on Iowa 2010* report was released in 2010 (ICCIC, 2010). One of the major recommendations from this report was to, "Increase investments in state programs that enhance wildlife habitat and management and restore public and private lands." The report stated, "Changes in climate will have a direct impact on both game and non-game species." In general, this report sought to highlight the latest literature documenting impacts in Iowa caused by a changing climate. In doing so, several key themes emerged including:

- The world is interconnected; changes in climate can easily reverberate across the globe.
- Iowans cannot reverse global climate change alone.
- Climate extremes cause the greatest impacts on people and the planet.
- Water: Too little limits drinking water and causes disease; too much generates floods, soil erosion, and other disease; changes in precipitation may prove to be one of the greatest impacts to such an agricultural region.

While this report relates most to how Iowans might adapt to climate change, ultimately mitigation efforts will be needed worldwide to reverse the trends discussed within.

Furthermore, the Iowa Smart Planning Act was signed into law in 2010, which articulates ten Iowa Smart Planning Principles. Smart Planning Principle 8: Natural Resources and Agricultural Protection includes three relevant adaptation planning strategies:

- Identify and protect wetland areas that are critical to slow the release of water into streams during times of extreme rain events;
- Establish strategies to promote redevelopment and compact new development that will minimize the conversion of farmland and woodland for urban use, to reduce the amount of impervious surface coverage in watersheds; and
- Develop state plans and programs to help farmers incorporate environmental protection practices, such as wetland protection, wetland restoration, buffer strips, and natural ground cover (grasses) that have been shown to lessen the "flashiness" of stream flow. Promote federal, state, and local funding for preservation of open space, farm, and forest land.

Iowa's State Wildlife Action Plan

The Iowa DNR and over 100 public and private partners developed the Iowa state wildlife action plan with a 25-year vision for addressing concerns regarding 999 of Iowa's birds, mammals, fish, amphibians, reptiles, mussels, land snails, dragonflies, and damselflies. Of the species considered, 147 are game species, and 297 are considered species of greatest conservation need (SGCN); nearly one third of all Iowa species are in need of conservation effort to prevent eventual candidacy for threatened or endangered status. Fish and birds have the greatest total number of species listed as SGCN, but aquatic and semi-aquatic wildlife have the highest percentages of their total number of species listed. Riverine habitats have the greatest number of SGCN among aquatic habitats, and woodlands have the most among the terrestrial habitats (Zohrer, 2005).

The vision elements and conservation actions in the plan are not specifically designed to be implemented by Iowa DNR. They are designed to provide a broad framework of actions that can be undertaken by conservationists at all levels of government, by private conservation organizations, and by private citizens. Extensive coordination will be necessary between stakeholders to make the vision a reality.

Partners for Fish and Wildlife Program

It is estimated that 73 percent of land in the United States and 98 percent of the land in Iowa is privately owned, and that the majority of fish and wildlife resources occur on those lands. Consequently, the conservation lands held by federal and state agencies and other conservation groups cannot completely provide for fish and wildlife needs. Because the habitat needs of all species of interest to the Service cannot be met solely on public lands, public funds are also expended on private lands to accomplish habitat improvements through programs such as the Partners for Fish and Wildlife Program (Partners Program).

The Partners Program provides technical and financial assistance to private landowners and tribes who are willing to, on a voluntary basis, help meet the habitat needs of the Service's federal trust species. The Partners Program assists with projects in a diversity of habitat types, which conserve or restore native vegetation, hydrology, and soils associated with imperiled ecosystems. Locally based field biologists work one-on-one with private landowners and other partners to plan, implement, and monitor their projects. The Partners Program field staff help landowners find other sources of funding and help them through the permitting process. This personal attention and follow-through is a strength of the program and has led to national recognition and wide support.

The Partners Program is guided by a national policy (FWS, 2003) with the following objectives:

- Promote and implement habitat improvement projects that benefit federal trust species;
- Provide conservation leadership, and promote partnerships;
- Encourage public understanding and participation; and
- Work with U.S. Department of Agriculture (USDA) to implement conservation programs.

The Partners Program works in a diversity of habitat types throughout the State of Iowa. Designated as a Partners Program focus area, the Des Moines Lobe lies within the boundaries of the district. Typical Partners Program efforts within this focus area strive to restore wetlands and surrounding upland habitats to form complexes of habitat for maximum benefit to grassland and wetland migratory birds. Most of the original tallgrass prairie and wetlands within this focus area are now row crop agriculture, primarily corn and soybeans.

Over the past fifteen years, the Partners Program at Iowa WMD and Union Slough NWR has assisted with restoring nearly 3,600 acres of upland and wetland habitat in over 185 projects (tables 2-1 and 2-2). The program has a five-year target for habitat restoration of 250 wetland acres and 500 upland acres as well as a five-year target for habitat enhancement of 150 wetland acres and 250 upland acres. Primary partners in this effort include the USDA, Iowa DNR, County Conservation Boards (CCBs), Pheasants Forever, The Nature Conservancy, Ducks Unlimited, and private landowners.

This work has the potential to affect a variety of wildlife species. For example, the endangered Topeka shiner will benefit directly from wetland restoration of riverine oxbows and secondarily from both tallgrass prairie and oak savanna restoration through improved water quality. In addition, this type of restoration project will help improve habitat conditions for numerous other species such as the federally threatened western prairie fringed orchid and prairie bush clover as well as additional species of special concern to the state and other conservation agencies. Many of these species are listed as SGCN by the Iowa DNR including Buff-breasted Sandpiper (*Tryngites subruficollis*), American Bittern (*Botaurus lentiginosus*), Bobolink (*Dolichonyx oryzivorus*), and Dickcissel (*Spiza americana*).

The result of a century and a half of change on Iowa's landscape has been a huge shift in the composition of Iowa's plant communities and the wildlife that inhabits them. With fertile soils and a favorable climate, it is likely that much of Iowa will remain in agriculture and private ownership in the near future. Large tracts of land for biodiversity management are seldom available; therefore, utilizing a private lands approach is a critical part of overall conservation in Iowa.

Table 2-1: Past Partners for Fish and Wildlife Program Projects within the Iowa WMD

Year	Wetland		Riparian		Upland	
	Acres	Number*	Acres	Number*	Acres	Number*
1997	650.9	31	0	0	649.4	24
1998	185.8	25	0	0	97.5	10
1999	130.9	25	0	0	119.6	10
2000	44.9	13	0	1	229.1	17
2001	66	11	225 ft.	0	112.9	14
2002	32.7	5	225 ft.	1	80	12

*Refers to individual projects.

Table 2-2: Partners for Fish and Wildlife Program Projects within the Iowa WMD Recorded in HabITS*

Year	Wetland		Upland		Invasive Species		Wood Duck Box/ Nesting Structure
	Acres	Number**	Acres	Number**	Acres	Number**	Boxes
2001	1	1	1	1	0	0	0
2002	37.2	6	76.5	11	0	0	0
2003	23.5	4	37.1	6	0	0	5
2004	10	3	283.25	11	0	0	5
2005	13	3	40	5	0	0	1
2006	10.48	4	0.66	1	0	0	0
2007	4.5	1	132.34	3	342.77	6	0
2008	61.1	5	5.33	3	150.48	4	0
2009	0	0	0	0	0	0	0
2010	0	0	0	0	103	3	0

*Current tracking database for Partners Program Projects, Habitat Information Tracking System.
**Refers to individual projects.

Iowa DNR Private Lands Program

The Iowa DNR's Private Lands Program has also completed substantial habitat work within the district. Since the program began, over 148,000 acres of habitat restoration or improvement have been planned and nearly 70,000 acres have been implemented (figure 2-6). This includes activities such as converting cropland to grassland, interseeding, prescribed burning, woody invasion removal, wetland restoration, and edge feathering.

Bird Conservation Areas

Bird Conservation Areas (BCAs) have been designated by Iowa DNR as significant habitat complexes for birds generally following guidelines established by Partners in Flight. They are areas of 10,000 acres or more made up of a core area of permanently protected natural habitat surrounded by a matrix of public and private natural lands. While targeted specifically at birds, large tracts of natural habitat such as these have been identified as providing significant habitat protection and restoration potential for SGCN. Seven BCAs occur within the district: Spring Run in Dickinson County, Eagle Lake Wetlands in Winnebago and Hancock Counties, Dewey's Pasture in Emmet, Palo Alto, and Clay Counties, Union Hills in Cerro Gordo County, Lower Morse Lake in Wright County, Raccoon River Savanna in Guthrie County, and Chichaqua-Neal Smith in Polk and Jasper Counties (figure 2-5).

Important Bird Areas

Iowa Audubon's Important Bird Areas (IBAs) Program is a citizen-led, science-based and data-driven bird conservation initiative. The district contains nine IBAs with joint BCA designation and 18 other IBAs scattered across its counties (figure 2-5). The intent of the program is to:

- Identify, recognize, and prioritize habitats that support the most seriously declining species of birds;

- Monitor bird populations and habitat conditions, and organize education programs at designated IBA sites where appropriate; and
- Work with landowners and land managers to develop and implement long-term conservation plans to protect, restore, enhance and manage IBAs according to their environmental threats and conservation needs.

Wetland Reserve Program

The Wetland Reserve Program (WRP) was established with the 1990 Farm Bill. Major flooding that covered Iowa and the Midwest in 1993 led to an effort designed to get development and agriculture out of areas prone to flood and return them to their original wetland condition. Iowa DNR in cooperation with USDA Natural Resources Conservation Service (NRCS) and other partners have been able to acquire permanent easements in nearly every county within the district (figure 2-6). Iowa DNR is working with landowners to enroll lands in the WRP and acquire their residual value so that these lands will be managed for wildlife.

According to the NRCS, the cumulative acres enrolled in WRP in the State of Iowa in 2008 totaled just over 80,000. In 2010, an additional 3,548 acres were enrolled in WRP across the state, down from 4,184 acres enrolled in 2009. Cumulatively then, in 2010, nearly 88,000 acres were enrolled in WRP across the state.

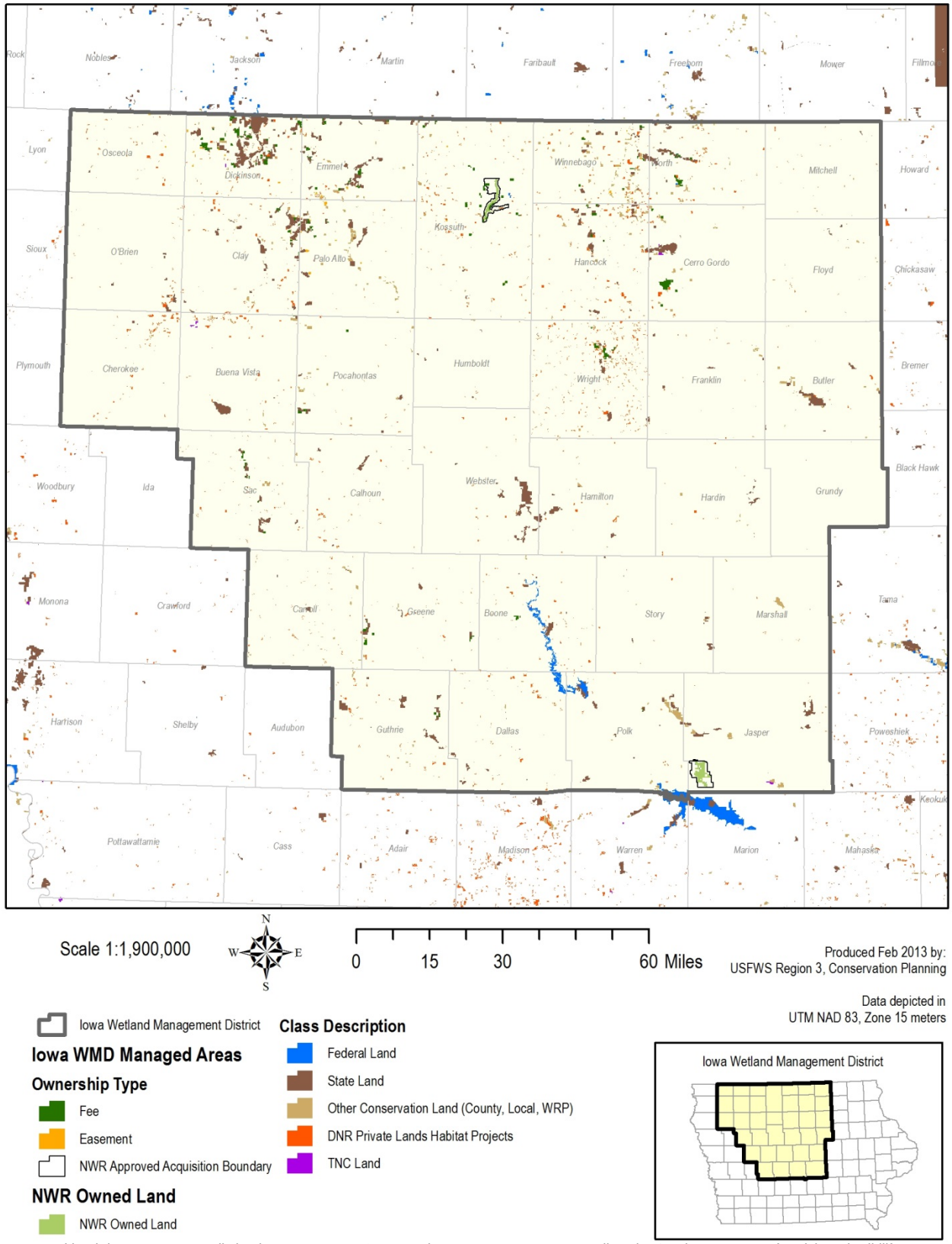
Furthermore, the Wetlands Reserve Enhancement Program, which is a component of WRP and is administered through NRCS, is and will continue to be an important habitat protection tool used in the district. This program has been instrumental in stretching the funding of the Small Wetlands Program in Iowa by enrolling private lands in WRP. In this program, willing landowners in priority complex areas work with Iowa DNR biologists to enroll their properties in WRP. Once the properties are accepted by NRCS, Iowa DNR completes and carries out restoration plans. The Service as a partner in the program would target this property for acquisition in either a permanent WPA easement or purchase as a WPA through fee title. Throughout this process both acquisition and restoration costs are greatly reduced.

Conservation Reserve Program

The USDA's Conservation Reserve Program (CRP) protects millions of acres of American topsoil from erosion and safeguards the Nation's natural resources. By reducing water runoff and sedimentation, CRP protects ground water and helps improve the condition of lakes, rivers, ponds, and streams. More recently, an emphasis has been placed on wetland and native prairie restoration as a condition of enrollment so the program has also become a major contributor to increased wildlife populations in many parts of the country.

In Iowa, new participants are making their lands available for wildlife habitat restoration. This presents an important role for the district to lend its restoration experience and expertise to make these CRP restorations as high quality as possible. According to the USDA Farm Service Agency, the total acres enrolled in CRP within the 35 counties of the district were 375,867 in 2010. This was the fourth year in a row for a decrease following an eight-year increase. This is likely due to recently high commodity prices, which are causing some producers to terminate their CRP contracts early to get the land back into row crop as soon as possible. Peak years for the district with just over 450,000 acres enrolled were 1993 and 1994. Guthrie County had the most acres (nearly 28,000) enrolled in 2010 while Cherokee had the least (just over 3,000).

Figure 2-6: Protected* Land in Iowa



*Protected land does not necessarily imply permanency. Conservation Reserve Program as well as the Service's Partners for Fish and Wildlife Program project locations were unavailable.

Other Conservation Lands in the Area

The district is administered by the staff of the Union Slough NWR, which was established in 1938 to provide refuge and breeding ground for waterfowl and other migratory birds. The refuge proper is 2,916 acres including 70 acres of easement (FWS, 2011a). The refuge also manages 160 acres of the Tallgrass Prairie NWR that were purchased near the Prairie Smoke WPA (FWS, 2011a).

The Northern Tallgrass Prairie NWR overlaps the majority of the district in Iowa and continues up into northern Minnesota along its western border. The refuge was established in 1999 with a primary goal of preserving 77,000 acres of native prairie and buffer lands at widespread locations within the historic range of the northern tallgrass region of Minnesota and northwest Iowa. Currently, the refuge includes over 5,200 acres in fee title, easement, and under lease or agreement (FWS, 2011a).

Neal Smith NWR is in the far south central part of the district. It was established in 1990 to re-create a large expanse of tallgrass prairie and oak savanna. Currently, the refuge is 5,387 acres (of the 8,645 acres approved for acquisition) (FWS, 2011a). However, an expansion was recently approved, which added 3,207 acres to the existing acquisition boundary of the refuge.

Nearly 190,000 acres of state land exist within the district including 27 state parks, 32 state preserves, over 160 Wildlife Management Areas (WMAs) and eight recreation areas. Nearly 2,000 acres of county parks and preserves exist within the district as well. The Nature Conservancy also owns several preserves within the district and continues work in two major project areas: Boone River Watershed and Little Sioux Valley (figure 2-5). Finally, the Department of Defense and Department of Energy maintain the Red Rock and Saylorville Reservoirs, both of which contain recreational land around them (figure 2-6).

The Planning Process

Public Involvement

Initial conversations about comprehensive planning for Iowa WMD began mid-year 2009 to review policy, discuss the core team, tour the district, discuss the Iowa DNR and Service partnership, and gather some background information.

Then, in December 2011, the scoping period began with a kick-off meeting held at the Dickinson County Nature Center in Spirit Lake, Iowa. Scoping, according to the Council on Environmental Quality regulations for implementing National Environmental Policy Act (NEPA), is " . . . an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action."

CCP Kick-off Meeting

District, Iowa DNR, and regional planning staff met to review existing baseline data, discuss the district vision statement and goals, and finalize the core planning team. Both Iowa DNR and tribal representatives from the Sac and Fox Tribe of the Mississippi were invited to join the core planning team. A work plan was developed for the following reasons:

- Ensure that the district manager, refuge supervisor, and Planning Division staff agree on the direction for preparation of the EA and CCP for the district;
- Identify the core planning team as well as others to support development of the EA and CCP;
- Provide a timeline for the planning effort; and
- Outline responsibilities of work for the planning effort.

In addition to identifying information that would be needed in the planning process, district staff also developed a communication plan including a list of stakeholders and a preliminary list of issues, concerns, challenges, opportunities, new directions, and potential sources of conflict to be addressed in the CCP.

Next, the planning team invited cooperative farmers, state agencies, tribal governments, non-government organizations, the general public, and others interested in the future of the district to identify issues and opportunities with district management. The public scoping period began on January 30, 2012 and lasted for 30 days. Approximately 400 letters were mailed to stakeholders announcing the public scoping period, inviting them to the open houses and explaining how to comment. The comment period was also announced through a press release sent to a wide variety of media in Iowa and Minnesota. A series of open houses was held across the district from 3:00 p.m. to 7:00 p.m. at the following locations and dates:

- Lakeview Community Room in Clear Lake on Monday, February 13, 2012
- Water's Edge Nature Center in Algona on Tuesday, February 14, 2012
- Dickinson County Nature Center near Spirit Lake on Wednesday, February 15, 2012
- Milwaukee Railroad Depot in Jefferson on Thursday, February 16, 2012

Dickinson County Public Open House

These open houses gave the public an opportunity to discuss ideas with district and state staff and regional planners. Thirty-nine people attended the open houses and 25 written comments were received during the public scoping period. Anytime throughout the planning process, stakeholders and others could fax, email, phone, or mail comments to the district or the regional office Conservation Planning group.

On April 10, 2012, an internal scoping review took place at the FWS regional office in Bloomington, Minnesota. Leaders from the Refuge System, Migratory Birds, Ecological Services, and other key Midwest

Region programs met with district and planning staff to further develop and refine the list of issues around which to focus the CCP.

During the first week of June 2012, the district hosted a planning workshop, which included nearly 40 invitees from the Service (regional office, district, HAPET, Partners Program, and Neal Smith NWR staff), Iowa DNR, Iowa State University, University of Minnesota, University of Northern Iowa, and the Kossuth CCB.

The workshop included a variety of exercises to review the issues and begin to develop the alternative ways of managing the district over the next 15 years. There was a general review and evaluation of the biological and visitor services programs at the district as well as a brainstorming for planning the future of those programs. The workshop also included field trips to a variety of Iowa DNR and district properties to gain a better understanding of the current management situation.

Partner Planning Workshop

Step-Down Management Plans

The CCP is a plan that provides general concepts and specific wildlife, habitat, and people-related objectives. Step-down management plans provide detail to managers and employees who will carry out the strategies described in the CCP. The district staff will develop the step-down plans listed in table 2-3 after completion of this CCP.

Table 2-3: Step-Down Management Plan Completion Schedule for the Iowa WMD

Step-Down Management Plan	Amount of Time for Completion after CCP Approval
Habitat Management Plan	3 years
Inventory and Monitoring Plan	3 years
Visitor Services Plan	4 years

Inventory, Monitoring, and Research

Following approval of the CCP and public notification of the decision, implementation will begin. Funding and staff time will be allocated to implementation of the CCP as appropriations and budgets allow. Development of a stepped down Habitat Management Plan (HMP) and other plans (i.e., Visitor Services Plan) will begin and serve to guide habitat management, restoration and reconstruction priorities, and public use. A companion Inventory and Monitoring Plan or additional chapters on inventory and monitoring appended to the HMP will be written to guide the district's priorities for monitoring. Information gained via inventories, monitoring, or research activities will allow the station to evaluate its progress in achieving the planning unit purposes, vision, and goals. The associated step-down plans will address habitat and/or population objectives and provide a means for evaluating the effects of management activities and public

use. Through adaptive management, evaluation of monitoring, and research results may indicate the need to modify district objectives or strategies.

Plan Review and Revision

The CCP is meant to provide guidance to the district manager and staff over the next 15 years. However, the CCP is also a dynamic and flexible document, and several of the strategies contained in this plan are subject to uncontrollable events of nature. Likewise, many of the strategies are dependent upon Service funding for staff and projects. For these reasons, the recommendations in the CCP will be reviewed annually and revised if necessary (FWS, 2000). The annual plan review process will include an evaluation of changing information and ecological conditions related to climate change. If significant changes are identified that compromise the district's purpose, vision, or goals, then the CCP will be revised. The CCP will be revised every 15 years or sooner when significant new information becomes available, ecological conditions change, major district expansion occurs, or when determined necessary by the periodic review (FWS, 2000). All plan revisions will follow the Service's planning process and will be compliant with NEPA. Minor plan revisions that meet the criteria of a categorical exclusion will be handled in that manner; however, if the plan requires a major revision, then the CCP process starts anew at the preplanning step (FWS, 2000).

Planning Issues

An issue is any unsettled matter that requires a management decision, such as an initiative, opportunity, resource management problem, threat to the resources of the unit, conflict in uses, public concern, or the presence of an undesirable resource condition (FWS, 2000). Issues arise from both within and outside of the Service. Public scoping as well as scoping of district and regional Service staff and other agencies produced ten issues that suggest alternative ways of managing the district and several others that did not.

Issues that Drive an Alternative

Wildlife

- What species group and life cycle is the focus of district management?

The primary purposes of the district are to serve as production areas for waterfowl and to provide habitat for migratory birds. However, WPAs provide habitat for a variety of other wildlife as well. Therefore, management of WPAs should primarily be for waterfowl production and other migratory birds. Resident wildlife or other species should be a secondary focus. Focusing management on all species can lead to not managing for any one species or group very well.

Habitat

- How should the district address the decrease in populations of grassland-dependent birds due to the decline of grassland habitat?
- How can the district improve/maintain upland habitat quality?
- What wetland type is the focus of district management?

- How can the district improve/maintain wetland quality?
- How can the district manage food plot use?

While much of the surrounding landscape is agricultural row crop, the district provides a real opportunity to build larger grassland/wetland habitats. However, the use of cooperative farming as a management tool has kept even the district habitat relatively small and somewhat fragmented. Agricultural row crop is not ideal habitat for grassland-nesting birds, in decline across much of their native range. Furthermore, many grassland-nesting birds have differing habitat structure requirements. Some species prefer thick, dense, tall cover; others need shorter, thinner cover. Meeting all of these needs is challenging in a landscape with limited habitat.

The large size of the district makes restoration of complete plant communities in both the upland and wetland (primarily the wetland) difficult. Other challenges such as how to best manage the invasive woody vegetation across the district, the expense and limit of local ecotype seeds, and the time and size of crop conversion to natives are also present. Furthermore, the Iowa DNR has numerous shallow lake (water quality) improvement projects underway on state land with many more planned. Restorations include in-lake management strategies as well as on-going efforts to implement best management practices on public and private land in the watersheds.

Since 2006, the amount of land under cooperative farming leases across the district has decreased while the total number of acres in WPAs has increased. Currently, the Iowa DNR manages approximately 21,200 acres of WPAs of which approximately 17 percent is under a cooperative farming lease. The Iowa DNR has a goal of seeding at least 500 acres of row crop agriculture in WPAs to native tallgrass prairie species during the 2013 season. This is also an annual target for the district over the next 15 years as described in appendix A as an objective. This is the result of recent collaborations between the Service and Iowa DNR to make it a district priority to convert cooperative farmed land to perennial cover at a more rapid rate.

Currently, the district manages complexes that contain a variety of wetland types often within the watershed of a shallow lake owned by the State of Iowa. However, the wetland type the district will focus on in the future will be determined primarily by the habitat needs of the focal species group and life cycle. This is also true for the use of food plots. Currently, they account for approximately three percent of the total upland WPA acres and are used to discourage depredation on private land, provide winter food, and improve recreational opportunities. However, there is a desire for future use to be eliminated or reduced in number and more strategically located.

Strategic Land Protection

- How will the district address the decreasing purchasing power of existing funds?
- What are the district's priority areas for acquisition?

In general, the public supports growing the district both for wildlife-dependent recreational opportunities as well as to improve/protect water quality. However, much of the land within the district is privately owned, and much of that land is in row crop agriculture. High commodity prices in recent years have driven land values within the district to an all-time high, therefore decreasing the amount of land that can be acquired with existing traditional funding.

Current acquisition is based on priority complexes established by the state in conjunction with the Service many years ago. Recently, however, a project was completed that could aid in determining the restorable wetlands left within the State of Iowa. This and other new information could help refocus priority areas for acquisition.

People

- How can the district promote awareness and understanding of WPAs as well as educate the public on the importance of their management?
- What public uses can the district allow that are appropriate and compatible with the Service and Refuge System mission and meet the public demand for more recreational opportunities?

The purpose of and reason for managing WPAs is not well known by some adjacent landowners, local communities, and larger cities within the district (especially by non-consumptive users). Therefore, the support and appreciation of these sites is lacking and better stewardship on adjacent private land (minimize overspraying and loss of wetland/grassland marginal areas) is desired. Marketing and utilization of the private lands and easement programs for the Service as well as the state could be improved across the district.

While WPAs are generally open to hunting (unless deemed a "waterfowl refuge" by the state), fishing, trapping by law, and other public uses have not yet been determined appropriate and/or compatible for the district. In general, there is demand from the public for more recreation (hiking, environmental education, etc.), wildlife observation opportunities (bird watching, etc.), public access, and hunting opportunities. Some of the specific public use requests for the district include the following:

- Ride horses
- Ride bikes
- Train dogs
- Operate motorboats
- Geocache
- Creatively write, paint, and photograph

Issues that Do Not Drive an Alternative

Public Use

- How can the district better align Service regulations for public use with state regulations, improve enforcement and clearly communicate regulations to users?

Many federal WPAs are adjacent or close to many state WMAs (habitat complexes). Currently, the rules and regulations for public use are not entirely consistent across ownership. This lack of consistency and clear signage/outreach on the rules and regulations has led to public confusion. Furthermore, with so many WPAs scattered across the district, some lack clear directional signage. This issue did not drive alternatives, because it will be addressed through

appropriate use designations and compatibility determinations (appendices F and G). District public use regulations will be aligned with the state's regulations as much as possible.

Federal-State Habitat Complex Signage

Several comments were received from the public to require non-toxic shot and tackle for all hunting and fishing in the district. Currently the only hunting in the district that is not required by law to use non-toxic shot is turkey hunting and slug deer hunting. Lead is a toxic metal that, in sufficient quantities, has adverse effects on the nervous and reproductive systems of animals and can be lethal to wildlife if ingested, even in small amounts. A ban on the use of lead shot for waterfowl hunting was phased-in starting with the 1987–88 hunting season. The ban became nationwide in 1991. Many refuges and, per state regulations, most counties within the Iowa WMD, also ban the use of toxic shot for upland game hunting for such species as squirrel, rabbit, quail, pheasant, and/or partridge. The Service continues to look at options and ways to reduce the direct and indirect impacts of toxic shot to scavengers and other wildlife. The Service is and has been phasing out the use of lead shot by hunters on Refuge System land.

As for fishing tackle, there are nontoxic fishing weights, such as split shots, for use in nontidal waters that are readily available on the marketplace. Many anglers use fishing tackle made from nontoxic materials such as tin, bismuth, steel, and tungsten alternatives, which are found in all 50 states. Many refuges/districts have banned lead sinkers for years.

As part of the Service's effort in implementing the vision stated in *Conserving the Future: Wildlife Refuges and the Next Generation* (FWS, 2011b), there are several implementation teams that will consider developing and implementing education products on the dangers of lead shot and fishing tackle. The Service invites and encourages the involvement of those interested parties in developing outreach elements relating to the dangers of toxicity in continuing efforts to educate the public on alternative ammunition and fishing tackle.

The National Wildlife Refuge System Improvement Act of 1997 directs the Service to make refuge/district regulations as consistent with state regulations as practicable. The Service shares a strong partnership with the states in managing wildlife and, therefore, is proceeding with the phase-out of toxic ammunition and tackle in a coordinated manner with the respective state wildlife agency. At this time, the Service desires to have the nontoxic shot shell regulations for the Iowa WMD be consistent with other WMDs within Region 3. Therefore, the topic of nontoxic shot shell usage for turkey hunting did not drive an alternative, because it will be a common element to all alternatives—a change from the current management but not differing across alternatives. However, the issue of using all nontoxic shot and tackle for all hunting and fishing in the district is a larger agency decision that is beyond the scope of this EA.

Inventory, Monitoring, Research

- How should the district measure success of management techniques?

There are currently very few inventory and research efforts in the district and minimal monitoring. Hence, there is a need for a sound evaluation of the current management philosophies to assess the influence that habitat acquisition and restoration are having on waterfowl and other wildlife populations as well as ecosystem function. Likewise, the Iowa Environmental Council requested regular water quality monitoring of wetlands within the district not only to document wetland quality, loss, and degradation, but also to provide a model for standardized wetland monitoring in the state long-term. Since the Iowa DNR has employed multiple species inventory and monitoring statewide, there is also a need to coordinate any new district efforts with the state to eliminate gaps and overlaps. This issue did not drive an alternative, because it will be a common element to all alternatives—a change from the current management but not differing across alternatives.

The Partnership

- How can the partnership be more efficient in habitat management, leveraging funding, and land acquisition?

The partnership refers to the agreement between the Service and the Iowa DNR; federal money is used to purchase district land while state staff manages most of what is acquired. While the partnership has long been a success, with limited funds and staff there is always a need to be as efficient as possible in operations and achieving habitat goals. More shared resources (shared funding, shared staff positions) may be necessary especially if the district continues an aggressive land acquisition program. This issue did not drive an alternative, because it is addressed in the recently updated MOU with the Iowa DNR (appendix K).

Land Acquisition

- How will the district address the public desire for more acquisition in the southern portion of the district, especially the Dunbar Slough/Willow Creek area?

The State of Iowa, local leaders, and nonprofit organizations submitted a proposal, as part of the America's Great Outdoors Initiative, to expand the existing Dunbar Slough/Willow Creek wetland complex by 5,000 acres and to establish the area as a refuge (http://www.slideshare.net/USInterior/americas-great-outdoors-fiftystate-report). This Dunbar Slough/Willow Creek wetland complex lies within the Iowa WMD approved acquisition boundary. Any acquisition that happens in this area would be under the Small Wetlands Program as a WPA. WPAs are part of the Refuge System. Furthermore, this area is already within one of the priority wetland complexes for district acquisition. Acquisition could also occur under the Northern Tallgrass Prairie NWR as this area is within that refuge boundary as well. For these reasons, this issue did not drive an alternative.

Management Tools

- What tools should the district utilize for habitat restoration and management, and what should be the season of their use?

The most commonly used management tool in the district is prescribed fire; however, utilizing other tools such as haying, mowing, and grazing may provide a more sustainable and efficient means of managing. Focal species group and life cycle will drive the major habitats that the district manages and will help determine which tools are best for managing those habitats. However, the details of which management tools will be used in the district will be addressed in the HMP that will be prepared in the future. Therefore, this issue did not drive an alternative, because it is beyond the scope of this EA.

Managing with Prescribed Fire

Wildlife

- How can the district mitigate negative impacts to desirable wildlife including disease, wind turbines, predators, pesticides and other contaminants, and human disturbance?
- How should the district reduce the impact of feral cats and nuisance populations of wildlife such as Canada geese, muskrats, and beavers in the district and adjoining private lands and urban areas?

Since water management is more difficult with scattered tracts of habitat, flood events are particularly degrading for the district in terms of sedimentation and spreading carp and other invasive species. Effects from nuisance wildlife such as beavers, muskrats, and feral cats are also amplified in this landscape, as are the effects on wildlife from human disturbance, contaminants, chemical use, drainage, predators, wildlife disease, and wind turbines. These specific issues did not drive alternatives, because they are generally addressed through the issues of wetland and upland habitat quality improvement (which did drive alternatives), and more details can be addressed in the HMP that will be prepared for the district in the future.

Chapter 3: Management Alternatives

In this chapter:

This chapter describes the four alternatives considered and analyzed in detail for how to manage the Iowa Wetland Management District (WMD, district) over the next 15 years (chapter 1 defines alternatives). These include current management as the “No Action Alternative" and baseline for analysis, as well as three other “action” alternatives. One of the three action alternatives (Alternative D) is the preferred alternative and constitutes the Comprehensive Conservation Plan (CCP) (appendix A). This chapter also describes and includes a rationale for other management action alternatives that were considered but not analyzed in detail. In addition, the end of this chapter includes a summary of the environmental consequences expected to occur from implementing the four alternatives considered in detail. More detail regarding the environmental consequences is in chapter 4.

Development of the Management Alternatives

Developing the management alternatives began with the issues that were derived from both public and internal scoping. While many issues were brought up and considered (chapter 2), only 10 were crucial drivers for developing the alternatives.

Next, a variety of possible solutions or different approaches to address each issue were developed (table 3-1). Some solutions were initially considered but were eventually determined to be unreasonable (did not fit the purpose of the district) and were ultimately eliminated (dark shading in table 3-1).

Then, one or a combination of solutions for each of the issues were packaged together to form alternatives. The primary driver for each alternative was focal species group and life cycle. Some solutions, for any given issue, did not fit into an alternative package, because they were less than ideal for the focal species group and life cycle around which that alternative was developed (light shading in table 3-1). Five action alternatives were initially developed in addition to the current management alternative (table 3-2).

Finally, some of the alternatives that were initially considered were, after further vetting, combined or eliminated and not considered in detail for various reasons. This process resulted in three action alternatives in addition to the current management or No Action Alternative (tables 3-3 and 3-4).

Table 3-1: Alternative-driving Issues and all "Solutions" Considered for the Iowa WMD

Goal		Issue	Solution	Solution	Solution	Solution
Wildlife		Focal species group (representative species) and life cycle.	Breeding waterfowl (Mallard, Blue-winged Teal).	Migrating waterfowl (Lesser Scaup).	Breeding and migrating grassland-dependent birds (Bobolink, Northern Harrier).	Native resident species (Blanding's turtle, damselflies).
Habitat		Prolonged decline of grassland-dependent bird populations due to the decline of grassland habitat.	Focus management on restoring cropland to native grassland.	Focus management on improving remnant prairie.	Focus management on improving previously restored low diversity prairie.	Focus management on restoring non-native (brome/alfalfa) dominated grasslands.
		Upland habitat quality.	Primarily focus management on restoring cropland to perennial grassland, secondarily manage remnant prairie, old brome and low diversity native planting conversion to higher diversity seedings are lowest priority.	Focus management on restoring remnant prairie and converting low diversity native plantings to a higher diversity.		
		Focal wetland type.	A variety of wetland types with an emphasis on seasonal and temporary wetlands.	Semi- or less permanent pothole wetlands important to restoring semi-permanent to shallow lakes.	Riparian wetlands that connect existing conservation land.	
		Wetland quality.	Restore and manage wetlands for waterfowl production; water quality secondary.	Restore and manage wetlands for food for migrating waterfowl, particularly water quality.	Address threats through active outreach and education.	
		Food plot use.	None.	At levels that do not materially detract from breeding waterfowl.		
	Strategic Land Protection	Decreasing purchasing power of existing funds and priority areas for acquisition.	Land protection is focused on fee title and easements. Existing Prairie Pothole Joint Venture (PPJV) priority complexes remain the priority for acquisition.	Land protection is focused on working with partners for perpetual protection of up to 112,000 acres. Priority areas are determined by new PPJV landscape-level planning tools and models developed.	Riparian wetland areas that facilitate connectivity between existing protected areas are the focus for acquisition.	Endangered and threatened species habitat is the focus for acquisition.
People		District awareness and understanding.	Public use information (brochure, Facebook page, etc.) is provided through Union Slough National Wildlife Refuge (NWR, refuge) and Iowa Department of Natural Resources (DNR) offices and websites with a consistent message.	Facilities (kiosks, trails, pull-offs, etc.) are provided at three locations across the district.	Outreach occurs in every county of the district through the County Conservation Boards.	Outreach is focused near city centers.
		Appropriate recreational opportunities.	Provide only hunting, fishing, and trapping per regulation.	Provide recreational opportunities in addition to those required by regulation.	Provide "big six" recreational opportunities in addition to trapping.	

Table 3-2: Management Alternatives Initially Considered for the Iowa WMD

Goal		Issue	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Wildlife		Focal species group (representative species) and life cycle.	Breeding waterfowl (Mallard, Blue-winged Teal).	Migrating waterfowl (Lesser Scaup).	Same as Alt. A.	Breeding and migrating grassland-dependent birds (Bobolink, Northern Harrier).	Native resident species (Blanding's turtle, damselflies).
Habitat		Prolonged decline of grassland-dependent bird populations due to the decline of grassland habitat.	Focus management on restoring cropland to native grassland.	Same as current management.	Same as Alt. A.	Same as Alt. A.	Same as Alt. A.
		Upland habitat quality.	Primarily focus management on restoring cropland to perennial grassland; secondarily manage remnant prairie; old brome and low diversity native planting conversion to higher diversity seedings is lowest priority.	Same as current management.	Same as Alt. A.	Same as Alt. A.	Same as Alt. A.
		Focal wetland type.	A variety of wetland types with an emphasis on seasonal and temporary wetlands.	Semi- or less permanent pothole wetlands important to restoring semi-permanent to shallow lakes.	Same as Alt. A.	Same as current management.	Riparian wetlands.
		Wetland quality.	Same as current management.	Restore and manage wetlands for food for migrating waterfowl, particularly water quality.	Same as Alt. A.	Same as Alt. A.	Same as Alt. B.
		Food plot use.	None.	At levels that do not materially detract from breeding waterfowl.	Same as Alt. A.	Same as Alt. B	Same as Alt. B.
	Strategic Land Protection	Decreasing purchasing power of existing funds and priority areas for acquisition.	Land protection is focused on working with partners for perpetual protection of up to 112,000 acres. Existing PPJV priority complexes remain the priority for acquisition.	Land protection is focused on private land agreements and conservation programs and same as Alt. A for priority acquisition.	Same as Alt. A and priority areas are determined by new PPJV landscape-level planning tools and models developed.	Same as current management and same as Alt. A for priority acquisition.	Same as Alt. B and riparian wetland areas facilitating connection of existing conservation land focus acquisition.
People		District awareness and understanding.	Same as current management WITH a consistent message.	Same as current management WITH a consistent message AND facilities (kiosks, trails, pull-offs) provided at three locations across the district.	Same as Alt. A.	Same as Alt. A.	Same as Alt. B.
		Appropriate recreational opportunities.	Provide only hunting, fishing, and trapping per regulation.	Provide recreational uses in addition to Alt. A.	Same as Alt. A.	Same as Alt. B.	Same as Alt. B.

Selecting the Preferred Alternative

The preferred alternative (Alternative D) was primarily chosen by the focal species group and life cycle that best fit the district's primary purpose of waterfowl production and primary funding source of migratory bird or Duck Stamp funding. While the other action alternatives are all reasonable, some of the other components of this alternative make it more comprehensive in providing the most wildlife diversity overall.

While breeding waterfowl is the focus of this alternative, the district could also provide important habitat for other migrating and breeding grassland/wetland birds. Therefore, quality wetlands surrounded by grassland cover in the uplands would be the focus for habitat management. This, when coupled with the limited funding and staff of the district, drove the preference to focus on converting the existing cropland to perennial grassland and wetlands rather than diversifying existing grassland cover. Food plots are not essential for breeding waterfowl, but can be important for other wildlife and may assist in detraction from depredation on private land. Therefore, a reduction in the current food plot level, but not an elimination of all food plots, is preferred. Furthermore, the existing priority areas (pothole complexes) for acquisition were based on a model using the best data available at the time; however, new landscape-level models and tools are being developed that may alter the priority areas. Alternative D allows for adaptation of those new models and tools if necessary.

And finally, while the district is generally open to hunting, fishing, and trapping by law the Improvement Act of 1997 declared wildlife-dependent recreational use as a priority and generally compatible for units within the National Wildlife Refuge System (NWRS, Refuge System). It defined these uses as those involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation. Furthermore, the *Conserving the Future: Wildlife Refuges and the Next Generation* (U.S. Fish and Wildlife Service [FWS, Service], 2011b) vision document recommendation number 18 is to "support and enhance appropriate recreation opportunities on national wildlife refuges . . . " and encourages the Refuge System to provide opportunities to the public without "traditional links to wild lands and wildlife." This suggests that at least some non-wildlife-dependent public uses may be appropriate and compatible as well. The public has requested additional wildlife-dependent and non-wildlife-dependent use opportunities in the district. Alternative D would allow for many of these requested uses, which have been found to be appropriate and compatible, to occur to be more consistent with neighboring WMDs and state regulations. The appropriate use designations and compatibility determinations in appendices F and G detail the uses that would be allowed.

Elements Common to All Alternatives

One element common to all the alternatives is the scale at which they would be implemented. The general management direction set under any alternative would apply to all district properties in which the Service has acquired an interest across the 35 counties. Currently, properties in Kossuth County, one in Pocahontas County, and all the WPA and FSA easements are managed by Union Slough NWR staff, while all other district properties are managed by the Iowa DNR. However, the management direction set under any alternative in this plan applies to all properties regardless of who manages them now or in the future.

Summary of the Alternatives

Table 3-3: Management Alternatives Considered in Detail for the Iowa WMD

Goal	Issue	Alternative A: Current Management	Alternative B	Alternative C	Alternative D: Preferred Alternative
Wildlife: In partnership with the Iowa DNR, restore a natural diversity and abundance of waterfowl, migratory birds and other native fauna within the Iowa WMD.	Focal species group (representative species) and life cycle.	Breeding waterfowl (Mallard and Blue-winged Teal) and resident wildlife (Ring-necked Pheasant).	Breeding waterfowl (Mallard, Blue-winged Teal).	Migrating waterfowl (Lesser Scaup).	Same as Alt. B.
Habitat: In partnership with the Iowa DNR conserve, restore, and expand grassland and wetland habitat managing for a natural diversity of native flora within the Iowa WMD.	Prolonged decline of grassland-dependent bird populations due to the decline of grassland habitat.	Declining grassland-dependent birds secondarily benefit from management focused on waterfowl that includes restoring cropland to native grassland, rotational cover (brome/alfalfa) and increasing plant diversity in low diversity plantings.	Focus management on restoring cropland to perennial grassland.	Same as Alt. A.	Same as Alt. B.
	Upland habitat quality.	Acquired properties are restored to native grasslands, portions are in rotational cover (brome/alfalfa), and portions of low diversity grass stands are converted to higher diversity, as budgets allow.	Primarily focus management on restoring cropland to perennial grassland; secondarily manage remnant prairie; old brome and low diversity native planting conversion to higher diversity seedings is lowest priority.	Same as Alt. A.	Same as Alt. B.
	Focal wetland type.	Variety of prairie pothole wetlands, especially those important to restoring semi-permanent to shallow lakes.	Semi- or less permanent pothole wetlands.	Semi- or less permanent pothole wetlands important to restoring semi-permanent to shallow lakes.	Same as Alt. A.
	Wetland quality.	Wetland management and restoration is focused on waterfowl production with a secondary benefit of improving water quality.	Same as Alt. A.	Wetland management and restoration is focused on providing food for migrating waterfowl, particularly through good water quality.	Same as Alt. A.
	Food plot use.	Food plots are present throughout the district to mitigate wildlife depredation on private land, provide winter food, and improve recreational opportunities.	None.	At levels that do not materially detract from breeding waterfowl.	Same as Alt. C.
Strategic Land Protection	Decreasing purchasing power of existing funds and priority areas for acquisition.	Fee title and easements are utilized with partners as perpetual land protection tools for up to 112,000 acres. Properties are acquired in the PPJV priority complexes.	Same as Alt. A except priority areas determined by new PPJV landscape-level models and tools developed.	Acquisition is focused on private land agreements/ conservation programs. Priority areas are determined the same as in Alt. B.	Same as Alt. B.
People: In partnership with the Iowa DNR, promote understanding, appreciation, and support for the Iowa WMD as well as stewardship and understanding of the southern Prairie Pothole Region (PPR) and its native ecosystems to visitors and local residents.	District awareness and understanding.	Public use information is provided through Union Slough NWR and Iowa DNR offices and websites.	Same as Alt. A WITH a consistent message.	Same as Alt. B AND facilities (kiosks, trails, pull-offs, etc.) are provided at three locations across the district.	Same as Alt. C.
	Appropriate recreational opportunities.	Hunting, fishing, and trapping opportunities are provided per regulation.	Same as Alt. A.	Provide recreational opportunities in addition to those required by regulation.	Same as Alt. C.

Table 3-4: Objectives for All Management Alternatives Considered in Detail for the Iowa WMD

Goal	Issue	Objectives			
		Alternative A: Current Management	**Alternative B**	**Alternative C**	**Alternative D: Preferred Alternative**
Wildlife: In partnership with the Iowa DNR, restore a natural diversity and abundance of waterfowl, migratory birds and other native fauna within the Iowa WMD.	Focal species group and life cycle.	Over the 15-year life of the CCP, maintain breeding pairs of ducks targeted in the four square mile survey at 0.9 pairs per wet acre across the Iowa WMD while also contributing to a stable population of Ring-necked Pheasant in Iowa.	Over the 15-year life of the CCP, increase the breeding population of Mallard by 450 pairs and Blue-winged Teal by 450 pairs on protected wetlands (permanent state and federal ownership) in the Prairie Pothole Region (PPR) of Iowa and develop strategies, as part of the district's Inventory and Monitoring Plan, to set recruitment goals for these species in the PPR of Iowa.	Over the 15-year life of the CCP, contribute to maintaining the 40 percent average Lesser Scaup population detected in the Mississippi flyway mid-winter waterfowl survey by providing food resources within the PPR of Iowa thereby improving body condition of birds arriving at nesting grounds.	Same as Alt. B.
Habitat: In partnership with the Iowa DNR conserve, restore and expand grassland and wetland habitat managing for a natural diversity of native flora within the Iowa WMD.	Prolonged decline of grassland-dependent bird populations due to the decline of grassland habitat.	Over the 15-year life of the CCP, grassland nesting bird habitat within the Iowa WMD results from the district's breeding waterfowl upland management strategy; diverse native grasslands with some rotational cover (brome/alfalfa).	Over the 15-year life of the CCP, increase native grassland habitat by 7,500 acres with a plant diversity of 100 or more species, and provide more suitable habitat (in terms of vegetative structure as will be defined in the district's Habitat Management Plan) in existing grassland for a wide variety of grassland-dependent birds within the Iowa WMD.	Same as Alt. A.	Same as Alt. B.
	Upland habitat quality.	Over the 15-year life of the CCP, acquired upland within the Iowa WMD is restored to native grasslands with some rotational cover (brome/alfalfa) and existing upland is diversified.	At the end of the 15-year life of the CCP, perennial grassland, preferably native, is present on at least 97 percent of the uplands of the Iowa WMD.	Same as Alt. A.	Same as Alt. B.
	Focal wetland type.	At the end of the 15-year life of the CCP a variety of wetland types (75 percent temporary and seasonal, 15 percent semi-permanent, and 10 percent permanent) exist across the Iowa WMD as representative of the pre-Euro-American settlement landscape.	Over the 15-year life of the CCP, wetland acquisition is focused on semi- or less permanent pothole wetlands representative of the pre-Euro-American settlement landscape across the Iowa WMD.	Over the 15-year life of the CCP, wetland acquisition is focused on semi- or less permanent pothole wetlands important to restoring semi-permanent to shallow lakes providing loafing, feeding, and stopover wetlands for spring and fall migrating waterfowl.	Same as Alt. A.
	Wetland quality.	Over the 15-year life of the CCP, wetlands within the Iowa WMD are restored and managed to provide breeding waterfowl pair densities of at least 0.9 pairs per wetland acre.	Same as Alt. A.	Over the 15-year life of the CCP, shallow lake water quality is protected, restored, and maintained to provide abundant native food for migrating waterfowl.	Same as Alt. A.

		Food plot use.	During the 15-year life of the CCP, food plots (primarily row crop corn or beans) are distributed at various locations across the Iowa WMD to provide for the winter food needs of resident wildlife and to reduce the impacts of both resident and migratory wildlife on neighboring property.	Within 10 years of CCP approval, no food plots exist on any Waterfowl Production Areas (WPAs) within the Iowa WMD.	During the 15-year life of the CCP, food plots are present on no greater than three percent of the upland acres within the Iowa WMD.	Same as Alt. C.
	Strategic Land Protection	Decreasing purchasing power of existing funds.	Over the 15-year life of the CCP, continue to pursue perpetual protection of wetland and grassland of up to 112,000 acres in the Prairie Pothole Region of Iowa in collaboration with county, state, and other federal governments, conservation organizations, private businesses, and concerned citizens. Landscape level planning tools (i.e., four-square mile survey, restorable wetlands layer, etc.) utilized by Iowa DNR and the Service's HAPET office will guide partners as to where strategic land acquisition should occur.	Same as Alt. A and over the 15-year life of the CCP, acquisition is focused in refined PPJV priority complexes.	Over the 15-year life of the CCP, protect, enhance and restore 3,500–4,000 acres of migratory waterfowl habitat in the Iowa WMD, regardless of ownership and over the 15-year life of the CCP, acquisition is focused in refined PPJV priority complexes.	Same as Alt. A.
People: In partnership with the Iowa DNR, promote understanding, appreciation, and support for the Iowa WMD as well as stewardship and understanding of the southern PPR and its native ecosystems to visitors and local residents.		District awareness and understanding.	Over the 15-year life of the CCP, public use information is available at Union Slough NWR and Iowa DNR offices for visitors using the Iowa WMD.	Over the 15-year life of the CCP, public use information is available with a consistent message about the district to visitors of the Iowa WMD.	Within 15 years of CCP approval, provide the infrastructure on three WPAs (such as trails, kiosks, pull-offs, etc.) and information (brochure, website, Facebook page, etc.) necessary for visitors to appreciate resources in the Iowa WMD, as defined in the Visitor Services Plan.	Same as Alt. C.
		Appropriate recreational opportunities.	Over the 15-year life of the CCP, allow uses required by regulation (hunting, recreational fishing, and recreational trapping—all in accordance with state regulations) as deemed compatible across the Iowa WMD.	Same as Alt. A.	Upon implementation of the CCP, allow uses required by regulation (hunting, recreational fishing, and recreational trapping—all in accordance with state regulations) as well as other public uses deemed appropriate and compatible across the Iowa WMD. Within four years of CCP approval, appropriate and compatible uses will be clearly articulated to the public through uniform signage, brochures, and Iowa DNR and Iowa WMD websites as identified in the Visitor Services Plan.	Same as Alt. C

Inventory, monitoring, and research would also be common to all alternatives. Existing WPAs or other district properties would be inventoried as necessary; any new techniques implemented would be monitored as necessary to allow for adaptive management; and research would be designed when and where it was needed to support and/or guide management.

One of the goals of refuge/district planning is "to provide a basis for adaptive management by monitoring progress, evaluating plan implementation, and updating refuge [district] plans accordingly" (FWS, 2000). Therefore, adaptive management will be a part of any alternative implemented as monitoring reveals, which actions are working, and which ones are not working to achieve the purposes of the district. Currently, at least some portion of three WPAs—Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties)—are closed by state regulation as waterfowl refuges. These refuges will remain regardless of which alternative is implemented as the CCP. This is not a change from the current situation nor would it vary across alternatives.

Requiring the use of nontoxic shot shells for turkey hunting was one part of an issue brought up during scoping. In an effort to gain consistency with other WMDs in Region 3, this requirement would also be common to all alternatives. After the *Federal Register* codification process (50 CFR) is completed in 2014, the following regulation will apply to the Service's fee title property within the Iowa WMD: "You may only use or possess approved nontoxic shot shells while in the field, including shot shells used for hunting wild turkey (see § 32.2(k))." The primary activity proposed under each of the alternatives below, including the No Action Alternative, is converting cropland to grassland. This transition increases soil carbon as perennial grasses take up carbon from the air, store it in their root, and shoot biomass, year round. As the stems, leaves, and roots die, that carbon is transferred into the soil—that is carbon sequestration. Annual crops absorb carbon from the air during the growing season, but then release it after harvest. The soils in Iowa, along with Minnesota, Vermont, New York, and Maine have the potential to store the most carbon across the Nation. Therefore, each of the alternatives was developed with climate change in mind. Reducing the district's contribution to climate change as well as monitoring the effects of climate change in the district is common to all alternatives.

Alternative A: Current Management (No Action)

Alternative A is the No Action Alternative. The National Environmental Policy Act and Service planning policy each require full consideration of a No Action Alternative with as rigorous of effects analysis as for any other action alternative. For this planning process, "No Action" refers to the continuation of the current management direction, and therefore, no CCP would be prepared or implemented. Alternative A is the least focused of all the alternatives considered in detail.

Breeding waterfowl, primarily represented by Mallard and Blue-winged Teal, and resident wildlife, primarily represented by Ring-necked Pheasant, are the current focus for management. However, declining grassland-dependent birds secondarily benefit from this management. Several different activities dominate management efforts, as budgets allow, including restoring cropland to native grassland, providing rotational cover (brome/alfalfa), and increasing plant diversity in low diversity plantings, but no one activity is focused on more than any other.

Restoration efforts are centered on a variety of prairie pothole wetlands and cooperation with Iowa DNR to complete shallow lake projects as habitat for the focal species groups. Acquisition is focused on wetland complex priority areas determined by the Prairie Pothole Joint Venture

(PPJV) that contain restorable wetland basins with a secondary benefit of improving wetland quality and clean water. Fee title, easement, and perpetual conservation programs are all utilized as land protection tools. Food plots are also present throughout the district to mitigate wildlife depredation on private land, provide winter food, and improve recreational opportunities for the public.

Environmental education, interpretation, and outreach are either absent or limited in the district, mostly due to the small staff. However, public use information is provided through Union Slough NWR and Iowa DNR offices and websites. Hunting, fishing, and trapping opportunities are provided at most WPAs per regulation.

Alternative B: Breeding Waterfowl

Alternative B is one of the two (along with Alternative C) most focused alternatives considered in detail. It was developed by considering that waterfowl production is the primary purpose of the district and Duck Stamp money is the primary funding source for land acquisition in the district. Therefore, breeding waterfowl, primarily represented by Mallard and Blue-winged Teal, would be the focus of management activities. Restoring cropland to perennial grassland would be the dominant activity while managing remnant prairie, converting old brome, and diversifying older native plantings would be lower priority.

Restoration efforts would be centered on the essential habitat needs of breeding waterfowl with a focus on temporary and seasonal pothole wetlands. Acquiring land where these potholes are located would likely be based on a new landscape-level tools and models developed by the PPJV since the current model is based on old data. However, fee title, easement, and perpetual conservation programs would all still be utilized by the Service and partners to protect up to 112,000 acres of grassland and wetland habitat.

In stark contrast to the current situation, food plots would be eliminated from the district. Breeding waterfowl do not rely on food plots for survival. With no other species group and life cycle as the focus, food plots would not be essential or appropriate regardless of their number and location.

Environmental education, interpretation, and outreach would remain at current levels with public use information being provided through Union Slough NWR and Iowa DNR offices and websites. More effort would be placed on distributing a consistent message for the entire district. Public use opportunities would remain limited to hunting, fishing, and trapping per regulation—uses that best fit with a breeding waterfowl focus.

Alternative C: Migrating Waterfowl

Alternative C is the other most focused alternative considered in detail. It was developed by mostly considering the secondary purpose of the district (migratory birds). Therefore, migrating waterfowl, primarily represented by Lesser Scaup, would be the focus for management activities. However, breeding waterfowl and declining grassland-dependent birds would still benefit from this management. Several different activities would dominate management efforts, as budgets allow, including restoring cropland to perennial grassland, providing rotational cover (brome/alfalfa), and increasing plant diversity in low diversity plantings, but no one activity would be focused on more than any other. This alternative was designed around ensuring good water quality across the district to support native vegetation and invertebrates that provide high quality

food for migrating waterfowl, such as the Lesser Scaup. High quality food helps maintain body quality and health throughout the migration so birds arrive at their destination, especially breeding grounds, as healthy as possible.

Restoration efforts would be centered on the essential habitat needs of migrating waterfowl—that is, semi-permanent to shallow lakes. Therefore, acquisition would be focused on semi- or less permanent pothole wetlands that are important to restoring semi-permanent to shallow lakes. Acquiring land where these potholes are located would be based on a new model developed by the PPJV specifically targeting habitat for migrating waterfowl. The current model would not be adequate as it is based on old data that targeted breeding waterfowl.

The solutions in Alternative C to four other issues are in direct contrast to Alternatives A and B. These include the following:

- Wetland restoration and management would be focused on providing food for migrating waterfowl, in particular through good water quality
- Food plots are limited as to not materially detract from breeding waterfowl
- Public use facilities (kiosks, trails, pull-offs, etc.) would be provided at three locations across the district
- Other recreational opportunities would be provided in addition to hunting, fishing and trapping

Some food plots can be essential to migrating waterfowl. However, their usefulness depends on what is planted and where they are located. Row crop food plots can also be a source of soil erosion, contamination of nearby water and detract from grassland habitat size.

Since migrating waterfowl are better suited for observation, strategically located additional public use facilities (i.e., kiosks, trails, pull-offs) and opportunities are appropriate for such a focus. The public has requested additional wildlife-dependent and non-wildlife-dependent use opportunities in the district. Alternative C would allow for many of these uses, which have been found to be appropriate and compatible, to occur. The appropriate use designations and compatibility determinations in appendices F and G detail the uses that would be allowed.

Environmental education, interpretation, and outreach, however, would remain at current levels with public use information being provided through Union Slough NWR and Iowa DNR offices and websites. As in Alternative B, more effort would be placed on distributing a consistent message for the entire district.

Alternative D: Preferred Alternative – Breeding Waterfowl

Alternative D is the preferred alternative and is mostly a combination of the other alternatives, including parts of the No Action Alternative. It is more focused than the current management but less focused than Alternatives B and C. It was developed by considering the primary purpose of the district: production areas for waterfowl and habitat for migratory birds. Therefore, breeding waterfowl, primarily represented by Mallard and Blue-winged Teal would be the focus for management activities. The dominant activity would be restoring cropland to perennial grassland and wetlands. Managing remnant prairie, converting old brome, and diversifying old

native plantings would be secondary since it is important for so many resources (air, water, soil, etc.) to get perennial cover on the bare ground first.

Restoration efforts would be the same as current management with a focus on a variety of prairie pothole wetlands, in particular temporary and seasonal types, many of which would positively influence and enhance Iowa DNR shallow lakes projects (i.e., acquire high densities of temporary and seasonal wetlands in proximity to existing or restorable semi-permanent and permanent basins to be used for brood rearing). More diverse habitat would allow for more diversity in wildlife, in particular, other grassland/wetland birds. Acquisition of the potholes would initially be the same as current management, working with partners to pursue perpetual protection of wetland and grassland of up to 112,000 acres in the Prairie Pothole Region, but may be modified by new landscape-level planning tools and models developed (with more recent data/information).

Food plot use would be the same as Alternative C, at levels that do not materially detract from breeding waterfowl. Public use opportunities and facilities would also be the same as Alternative C. The public has requested additional wildlife-dependent and non-wildlife-dependent use opportunities in the district. Alternative D would allow for many of these requested uses, which have been found to be appropriate and compatible, to occur to be more consistent with neighboring WMDs and state regulations. The appropriate use designations and compatibility determinations in appendices F and G detail the uses that would be allowed.

Environmental education, interpretation, and outreach, however, would remain similar to current levels with public use information being provided through Union Slough NWR and Iowa DNR offices and websites. However, as in Alternative B, more effort would be placed on distributing a consistent message for the entire district through coordination meetings, additional kiosks, trails, pull-offs, etc., and an informational and regulatory brochure.

Alternatives Considered but not Analyzed in Detail

Solutions Considered but Eliminated

Table 3-5 is a subset of table 3-1. It shows some possible solutions for some issues that were initially considered but were later eliminated.

Table 3-5: Solutions to Issues Initially Considered but Eliminated for the Iowa WMD

Issue	Solution
Wetland quality	Address threats through active outreach and education.
Priority areas for acquisition	Endangered and threatened species habitat.
District awareness and understanding	Outreach occurs in every county of the district through the CCBs.
	Outreach is focused near city centers.
Appropriate recreational opportunities	Provide “big six” recreational opportunities in addition to trapping.

The three solutions dealing with outreach were eliminated simply due to the limited staff and budget of the district. Some outreach currently occurs, but it is limited in scope and only as

budgets allow. It was determined that approaches, which focus on outreach as a solution, were not reasonable or viable given the current staff and funding.

The solution to focus areas for acquisition on endangered and threatened species was eliminated, because it does not meet the purposes of the district. These species will secondarily benefit from management activities proposed in the alternatives considered in detail.

Providing the "big six" recreational opportunities in addition to trapping was eliminated, because it was limiting and not in line with the future vision of the Refuge System. The "big six" public uses are defined as wildlife-dependent and include hunting, fishing, wildlife observation, photography, environmental education, and interpretation. The future vision of the Refuge System encourages providing, where appropriate, some non-traditional (i.e., non-wildlife-dependent) public uses. Therefore, the solution to provide recreational opportunities in addition to those required by law (hunting, fishing, trapping) was included in some of the alternatives considered in detail. Appendices F and G detail the uses that would be allowed within the district.

Alternatives Considered but Eliminated

Two alternatives were initially considered but were not analyzed in detail. This sub-section includes rationale for why these alternatives were not considered in detail.

Breeding and Migrating Grassland-Dependent Birds Focus

This alternative was not considered in detail, because it does not completely fit the purposes of the district—as areas for waterfowl production and habitat for migratory birds. It was also determined that since many of these species will secondarily benefit from management activities focused on waterfowl or prairie pothole dependent birds, there was not a need to focus an alternative around them. Furthermore, all of the solutions to the issues for an alternative with this focus were captured in other alternatives.

Native Resident Species Focus

This alternative was not considered in detail, because it does not fit the purposes of the district—as areas for waterfowl production and habitat for migratory birds. This approach would have focused management and acquisition on riparian wetlands that connected existing conservation land for less mobile species. However, these areas would not have served as ideal habitat for waterfowl and migratory birds. Again, many of these species will secondarily benefit from management activities proposed in the alternatives considered in detail; however, it was not appropriate to focus an alternative around them. Furthermore, most of the solutions to the issues for an alternative with this focus were captured in other alternatives.

Summary of Environmental Consequences

Table 3-6 compares and contrasts the various environmental effects that are expected to result from implementation of the four alternatives. The environmental consequences of each impact topic were defined based on type of effect, intensity, context, and duration for the following resources: Climate Change, The Soil Resource, Water Resources, Air Quality, Habitat,

Ecosystems, Wildlife, Socioeconomics, and Visitor Services. Further description of the effects can be found under each resource in chapter 4.

Type refers to an effect being either neutral, adverse, or beneficial for the topic being analyzed. Some resources may not be affected by a given activity; therefore, the type of effect is none. Effects also can be direct or indirect. Direct effects are caused by an action, and occur at the same time and place as the action. Indirect effects are caused by the action and occur later or farther away but are still reasonably foreseeable.

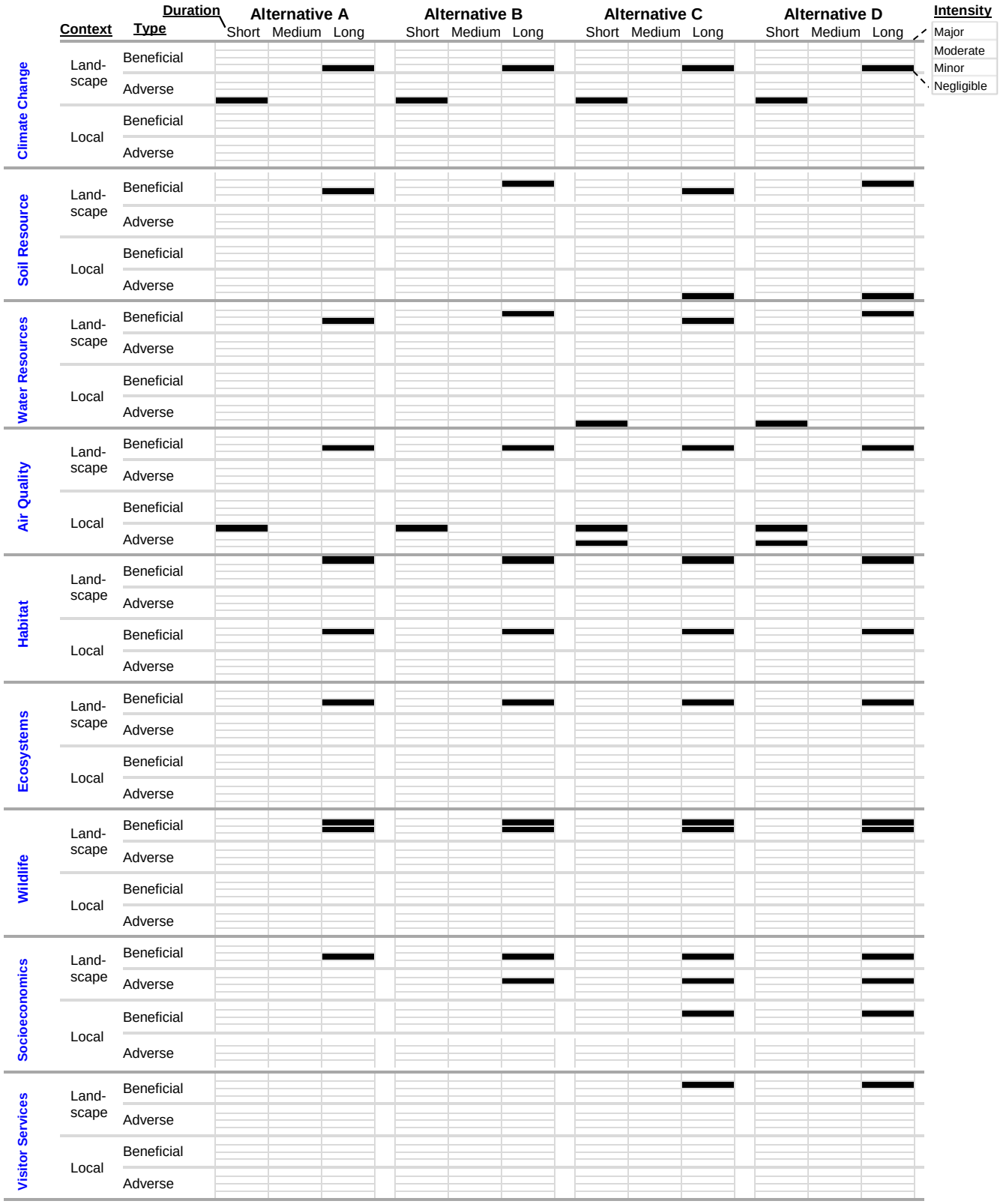
Duration refers to how long an impact would last. The planning horizon of this plan is approximately 15 years. The following terms were used to describe the duration of the impacts:

- Short-term: The effect would be temporary, lasting only during the management activity.
- Medium-term: The effect would be temporary, lasting less than the life of the plan.
- Long-term: The effect is expected to persist beyond the life of the plan.

Intensity refers to the degree or magnitude to which a resource would be positively or negatively affected. Each effect was identified as negligible, minor, moderate, or major in conformance with the criteria for the classifications established for each impact topic. Further definitions and indicators for intensity by resource can be found in chapter 4. The planning team qualitatively evaluated the intensities of effects on all the resources.

Context refers to the setting within which an effect is analyzed, such as the affected region or locality. In this document, most effects would be either local (site-level where the action is occurring) or landscape (district-wide or larger).

Table 3-6: Summary of Environmental Consequences by Alternative for the Iowa WMD



Chapter 4: District Environment, Current Management, and Environmental Consequences

In this chapter:

This chapter describes the existing physical, biological and social environment of the Iowa Wetland Management District (WMD, district) and its surroundings. Much of this environment will be affected, positively or negatively, by implementing any of the previously mentioned management alternatives. The consequences of those effects are also analyzed in this chapter.

Physical Environment

Geographic Setting

The Iowa WMD is part of the larger Prairie Pothole Region (PPR) (figure 1-2). This geographic area of central North America, mostly the Midwestern Great Plains, consists primarily of midgrass and tallgrass prairies interspersed with wetlands. Stretching northwest from northern Iowa through southwest Minnesota, eastern South Dakota, eastern and northern North Dakota, southwest Manitoba, and southern Saskatchewan to southeast and east-central Alberta (and even a little of northern Montana), the region is covered with thousands of shallow, sometimes seasonal ponds known as potholes or sloughs. The area is the summer home and breeding grounds of some 45 million mallard, pintail, gadwall, and teal ducks as well as many other shorebirds, songbirds, and gamebirds.

More specifically, the Iowa WMD acquisition boundary includes a 35-county area in north-central and northwest Iowa (figure 1-1). The district spans from the Minnesota border to Des Moines, from Cherokee to Grundy Center, and from Guthrie Center to Newton. The district includes the cities of Fort Dodge, Spencer, Mason City, Clear Lake, Marshalltown, Webster City, and Charles City. The acquisition boundary encompasses over one-third of the State of Iowa including both the largest county by size (Kossuth) and the largest county by population (Polk).

Current Management

The geographic setting of the district and its surroundings cannot be managed.

Effects

Direct, Indirect, and Cumulative

None of the actions included in any of the alternatives will have any effect on the geographic setting of the district or its surroundings.

Ecosystem Setting

At the time of the periodic advance and retreat of glaciers, the district was a mix of grasslands and forests of spruce, aspen, and oak. Stretching north of Des Moines—in areas where the ice had melted—marshes, wetlands, and bogs were common. This environment supported a variety of herbivores, revealed today in fossils, including mammoth, mastodon, giant ground sloth, musk ox, a variety of bison, and elk. However, within a few centuries, temperatures warmed and the ice melted for the last time. New forests filled the river valleys, and prairies stretched west and south with marshlands to the north (State Historical Society of Iowa, 2010).

Two ecoregional provinces are represented in the district: Eastern Broadleaf Forest and Prairie Parkland (Bailey, 1995). Within the Eastern Broadleaf Forest Province the district lies within the Minnesota and Northeast Iowa Morainal Oak Savanna section. Within the Prairie Parkland Province the district lies primarily within the North-Central Glaciated Plains section with a small portion in the Central Dissected Till Plains. Furthermore, the district lies primarily within the Southern Des Moines Lobe and Upper Minnesota River-Des Moines Lobe subsections with much smaller portions reaching into seven other subsections (figure 4-1). The Des Moines Lobe is also recognized as a landform of Iowa (figure 4-2) and is described in the Topography and Geology section of Chapter 4. A smaller portion of the district also stretches into the Northwest Iowa Plains, Iowan Surface, and the Southern Iowa Drift Plain landforms; however, these are most prevalent farther to the northwest, northeast, and south, respectively (Prior, 1991).

Current Management

The district manages the ecosystem setting primarily through activities designed to restore cropland to perennial grassland in the uplands and to wetlands in the lowlands. Wetland restoration is directly linked to, generally improved, hydrology.

Effects

Direct, Indirect, and Cumulative

Indicators used for evaluating effects on ecosystems include the following:

- Features: These are site-specific characteristics of a natural resource system including soil, ground cover, and hydrology, which establish its capacity to support various ecosystem functions.
- Functions: These are biophysical processes including fish and waterfowl habitat, cycling carbon, and trapping nutrients, which take place within an ecosystem typically characterized apart from any human context. The level of a given function depends on the innate capacity of the ecosystem including local site characteristics and its relationship to the larger landscape context such as the connectedness to other natural or human features or the accessibility to wildlife.
- Services: These are beneficial outcomes that result from ecosystem functions, which include better fishing and hunting, cleaner water, better views, and reduced human health and risks. They require an appreciation by humans and can be measured or expressed in physical terms including catch rates, water quality, and property damage avoided. Services depend on ecosystem functions and certain aspects of landscape

context such as the proximity to floodwaters, people, and property and the accessibility to hunters, birders, and anglers.

- Values: Merriam-Webster defined values to be the quality of a thing according to which it is thought of as being more or less desirable, useful, estimable or important. Using this definition the values of an ecosystem might be defined in terms of its beauty, its uniqueness, its irreplaceability, its contribution to life support functions or commercial or recreational opportunities, or its role in supporting wildlife or reducing environmental or human health risks, or providing many other services that benefit humans.

The intensity categories for determining effects on ecosystems are defined as the following:

- Negligible: No measurable or detectable change
- Minor: Slight effect, may be a detectable change
- Moderate: Clearly detectable, appreciable change
- Major: Substantial improvement or a severe decrease

The effects on the ecosystem from implementing the various alternatives described above were determined to be the following:

Beneficial, Long-Term, Minor, Landscape

For all alternatives, restoring wetlands and converting uplands from cropland to perennial grassland would have a district-wide and perhaps wider effect on ecosystem features, functions, services, and values. Restored wetlands and perennial grassland cover are features that would improve functions such as habitat and nutrient cycling, which in turn would provide better services including hunting, trapping, and cleaner water and would increase the values of the district and the PPR. These features also hold soil in place and allow water to infiltrate during heavy rain events, thereby reducing flash flood damage to human property and lives. Acquiring and restoring wetlands and associated uplands in complexes, especially in conjunction with the Iowa Department of Natural Resources (DNR) and other conservation partners, builds larger blocks of habitat, promotes connectedness, and improves wildlife accessibility.

Other conservation agencies are also acquiring and restoring wetlands and their associated uplands on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on the ecosystem as described above. However, there are private lands within the district that are still being drained and planted to agriculture. Some private land in the U.S. Department of Agriculture's (USDA) Conservation Reserve Program (CRP) for example, has expiring contracts, which is also being returned to agriculture.

Topography and Geology

The landscape of the district is considered geologically young, as it was affected by the most recent glacial advance in Iowa. The Pre-Illinoian (over two million years ago) and Illinoian (300,000 to 130,000 years ago) glacial deposits are buried under the Wisconsinan deposits from about 50,000 years ago. As the environment cooled, a large ice sheet formed in the Hudson's Bay region and began to spread south. One lobe entered central Iowa and moved as far south as Greene County. Then, as the climate warmed about 30,000 years ago, this lobe retreated.

Figure 4-1: Bailey's Ecoregional Provinces, Sections, and Subsections for the Iowa WMD

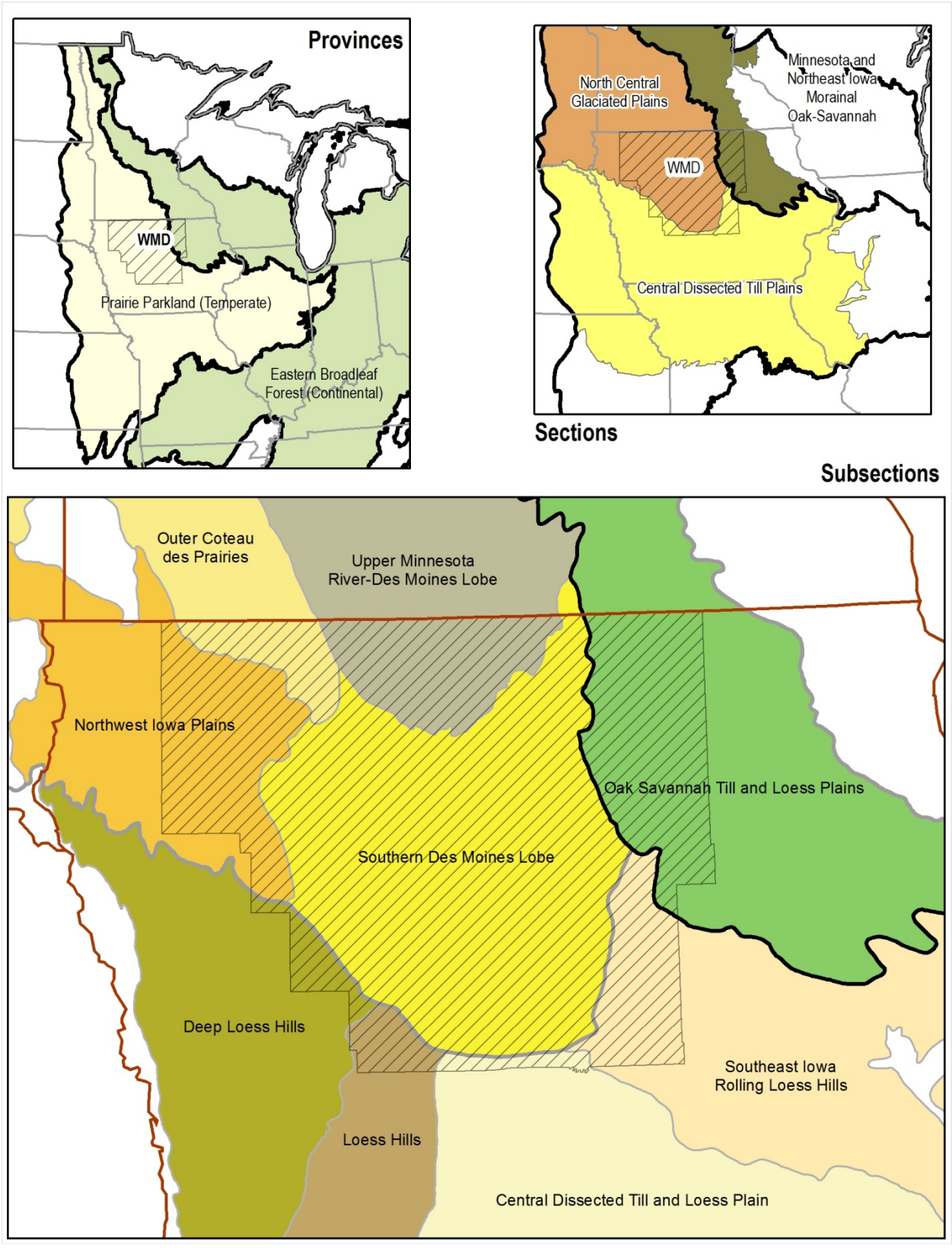
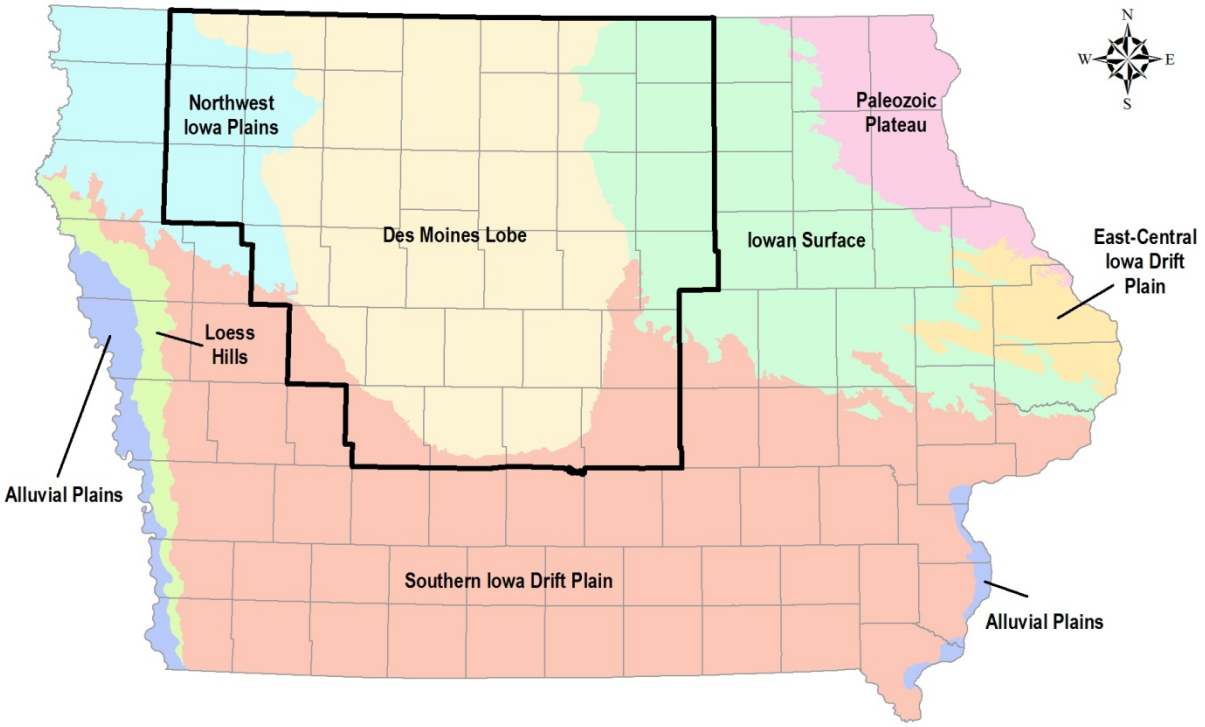


Figure 4-2: The Landforms of Iowa



As temperatures cooled again, another glacier known as the Des Moines Lobe, entered Iowa and moved down through its center to the modern-day city of Des Moines about 17,000 years ago. By 15,000 to 12,000 years ago, the ice sheet was gone, leaving behind a flat to undulating terrain. The landscape was poorly drained and filled with pebbly deposits from the stagnant decaying ice; sand and gravel from swift meltwater streams; as well as clay and peat from glacial lakes. The landscape was also left devoid of any loess deposits since the ice sheet was still covering it while those deposits were occurring elsewhere in the state. Today, glacial moraines form prominent features in the area including Ocheyedan Mound in Osceola County, Pilot Knob in Hancock County, and Pilot Mound in Boone County.

Current Management

The topography and geology of the district and its surroundings cannot be managed.

Effects

Direct, Indirect, and Cumulative

None of the actions included in any of the alternatives will have any effect on the topography or the geology of the district or its surroundings.

Climate

The district climate is characterized as extreme mid-continental or humid continental with warm, usually hot, and humid summers and cold, snowy winters. The average summer temperature is

76 ºF, and the average winter temperature is 33 ºF. The July high averages 85 ºF while the January low averages 8 ºF. The average annual daytime relative humidity is around 72 percent, increasing across the district from southwest to northeast. Prevailing winds are from the northwest with average wind speeds of 11 miles per hour.

Total annual precipitation increases across the district from the northwest to the southeast with an average of 30 inches. About two-thirds of this precipitation falls between April and September with a peak in late spring/early summer. Average annual snowfall is around 31 inches. The length of the growing season varies from 135 days in the northwest portion of the district to 155 days in the southeast portion. An approximate twenty-year drought cycle occurs in Iowa, which may be important in limiting the occurrence of some prairie species and certain northern wetland species and is critical in restricting woody species (Eilers and Roosa, 1994).

Predicted Change

Iowa is no exception to the well-documented changing climate across the globe (ICCIC, 2010). Geologic records of Iowa show that the state's climate has always been changing, although at a slower rate than today. Statistically significant changes in Iowa's precipitation, streamflow, nighttime minimum temperatures, winter average temperatures, and dewpoint humidity readings have occurred during the past few decades. Iowa has already been experiencing warmer winters, longer growing seasons, warmer nights, higher dewpoint temperatures, increased humidity, greater annual streamflows, and more frequent severe precipitation events than were prevalent during the past 50 years (ICCIC, 2010).

Regardless if the impacts from such changes seem positive or negative; it is likely that these trends will continue, especially with increased global release of greenhouse gas (GHG) emissions. Unfortunately, Iowa is among the states with the largest GHG emissions per capita. However, Iowa is also among the states that could benefit the most economically by mitigating climate change using energy efficiency and renewable sources of energy (ICCIC, 2010).

More specifically, the PPR of Iowa appears to be particularly vulnerable to impacts from climate change. Even though much of the land in this area is in row crop agriculture, most of what is left of the state's wetlands also occur here. Since climate, precipitation, and temperature heavily influence the functionality of wetlands, these systems are expected to change dramatically with the changing climate. The most recent literature (Johnson et al., 2010) predicts the Iowa portion of the PPR will become the most dynamic and therefore productive when compared to the western portion of the PPR that is expected to dry significantly. However, the literature also suggests that the area will have "too few functional wetlands and nesting habitat to support historic levels of waterfowl and other wetland-dependent species."

According to the *Iowa Climate Change Adaptation & Resilience Report* (EPA, 2011), Iowa's climate has changed in the following ways:

- Precipitation in Iowa has increased since the 1940s: Total annual precipitation has increased about 10 percent; more rain falls during spring and early summer with more heavy downpours.
- Stream and river flow have increased about 20 to 50 percent since the 1940s: More days have high stream flow in central Iowa, and spring soil moisture is close to saturation more frequently.

- Statewide winter temperatures have increased: On average, there are about five more frost-free days than in 1950; thaw-freeze cycles are more frequent.
- Wind speeds have declined over the last 30 years, potentially worsening air quality.

These increases are predicted to continue well into the future. Floods, heat waves, and severe weather events are all also predicted to increase with these changes in Iowa's climate.

In general, these trends are similar to those found throughout the PPR from 1906 through 2000 (Millet et al., 2009). More specifically, the western portion of the PPR, which includes the Dakotas and portions of Montana and Canada, has been getting drier while the eastern portion, which includes Iowa and southwestern Minnesota is becoming wetter. As this gradient steepens, the productive wetland ecosystems of the PPR will shift and shrink.

Historically, the climate of the western (portions of Montana, Saskatchewan, and Alberta) and eastern (Iowa and southwestern Minnesota) portions of the PPR would have limited wetland productivity due to either insufficient moisture and very long time between vegetation cover change or slow vegetation cover change, prolonged lake-marsh conditions, and too much water, respectively (Johnson et al., 2010). The most dynamic and therefore most productive wetlands would have occurred in the middle of these two extremes, across the Dakotas and parts of Canada.

Three climate change scenarios, (temperature increase by 2 ºC, 4 ºC, and 4 ºC plus a 10 percent increase in precipitation) suggest that in the future, the eastern portion of the PPR could see improvements in wetland productivity (Johnson et al., 2010). A dryer climate could create a more balanced water/vegetation cycle, more dynamic wetlands, and therefore more productive wetlands. This both highlights the importance of the Iowa WMD within a changing climate but also poses a potential conservation challenge since much of the area has been drained and plowed for agriculture. It seems likely that this area will "have too few functional wetlands and nesting habitat to support historic levels of waterfowl and other wetland-dependent species" (Johnson et al., 2010). The challenge is further compounded by the high cost of wetland and grassland restoration in Iowa, high commodity prices, increased agricultural desires, and in turn high land values. Restoration of drained wetlands in Iowa, although expensive, could help diminish the effects of climatic drying and droughts in the western portion of the PPR (Millett et al., 2009). If any of these scenarios hold true, climate change would strongly reduce the contribution of the western PPR to overall wetland-associated biodiversity and would make the eastern PPR much more important. However, significant wetland restoration would have to occur in the eastern PPR to offset less productive conditions in the western PPR (Millett et al., 2009). Furthermore, adaptation of farming practices in wetland watersheds may buffer the effects of climate change on wetlands (Johnson et al., 2010).

Overall, a decrease in water supply to wetlands in the western PPR will likely cause significant shifts in plant communities either as direct responses to water level changes or indirectly through altered soil chemistry, decomposition, and disturbance regimes. For example in Minnesota, calcareous fens, providing habitat for a relatively large portion of rare plant species, may have reduced flow from lower hydraulic head in the ground water recharge favoring non-calciphitic vegetation (Galatowitsch et al., 2009). Unfortunately, several invasive species, including reed canarygrass, will also be favored. A shortened hydroperiod for wetlands will also severely affect vertebrates because of their longer life cycle requirements. These changes (based on a doubling of carbon dioxide output) could cut the U.S. mid-continent breeding duck population in half (Johnson et al., 2010).

Effects

Direct, Indirect, and Cumulative

Indicators used for evaluating effects on climate change include the following:

- Carbon footprint: Both addition (emission) and removal (sequestration) of carbon from the atmosphere. Emission implies that the station is adding carbon to the atmosphere through outputs such as combustion and fossil energy use. Reduction implies that the refuge/district is trapping and storing carbon in biomass via sequestration.
- Awareness: The refuge/district's relationship with the general public understanding of climate change. Components of this understanding include such things as education, research, monitoring, policy, outreach, capacity-building, and collaboration.
- System fortitude and resiliency: Changes in the ability of natural and human systems including habitat, wildlife, human populations, and ecological processes to withstand or adapt to climate change due to characteristics such as susceptibility to threats, level of stress, system health, connectivity, size, diversity, and so forth.

The intensity categories for determining effects on climate change are defined as the following:

- Negligible: Management effect would be slight and undetectable; therefore, it would have no discernible effect on climate change
- Minor: Management might result in a slightly detectable effect regarding climate change but would result in little overall detraction or improvement
- Moderate: A noticeable change in management impacts on climate change
- Major: A substantial improvement or a severe decrease in management impacts on climate change

The effects on climate change from implementing the various alternatives described above were determined to be the following:

Beneficial, Long-Term, Negligible, Landscape

For all alternatives, restoring cropland, which may include some food plots, to perennial grassland or wetland would have a district-wide and perhaps wider effect on climate change in terms of reducing carbon footprint through sequestration and improving system fortitude and resiliency. A system such as this is less altered and closer to its natural state, with more perennial cover that sequesters more carbon and is more resilient to climate change.

Other conservation agencies are also restoring cropland to perennial grassland or wetland on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on climate change as described above.

Adverse, Short-Term, Negligible, Landscape

For all alternatives, localized increase in emissions from operation of vehicles or heavy equipment associated with potential future facility construction such as kiosks, trails, and pull-offs, which are needed to improve district awareness and understanding, increased public use providing appropriate recreational opportunities, or general management activities (acquisition) would increase the carbon footprint of the district.

Other sources of emissions adding to the overall carbon footprint are present across the landscape as well. Expected changes in these sources are unknown at this time but would likely be minor given the rural nature of the district and general lack of large growing metropolitan areas. A general awareness of climate change and actions citizens can take to reduce their impacts is present across the district.

The Soil Resource

The parent material of the district is all sedimentary rock including shales, sandstones, limestones, and dolomites. The western one-half is from the Cretaceous Era, the eastern one-half is from the Middle Paleozoic Era featuring Silurian, Devonian, and Mississippian Periods. The southern portion is from the Upper Paleozoic Era featuring Pennsylvanian and Permian Periods. The soils of the district are those typical of much of the Midwest, primarily mollisols with some alfisols. Mollisols naturally form under grassland cover with deep organic matter and are prime farmland especially if drained. Alfisols naturally form under hardwood forest cover with clay-enriched subsoil and high native fertility and are also prime farmland (figure 4-3).

Changes to the soil resource, such as erosion, are common occurrences in Iowa. It is well known that land use has a large influence on soil erosion rates and that soil erosion has a negative influence on soil fertility and its overall production potential (farmers often have to add fertilizer to maintain crop production). In the 1950s, after recognizing the increased potential for soil erosion under modern agriculture, the USDA developed soil-loss tolerance values, also known as “T-value.” This represents the amount of erosion loss the soil can withstand without sacrificing long-term productivity. The T-value for most soils in Iowa is 5 tons/acre/year. While the T-value is a useful concept for maintaining long-term sustainability of the site, there are conditions where those values could result in excessive sediment delivery to receiving waters to the detriment of fish and other aquatic organisms. In fact, Montgomery (2007) compiled studies from across the globe and confirmed that erosion rates from conventionally plowed agricultural fields average 1–2 orders of magnitude greater than rates of erosion under native vegetation and rates of soil production. Many of the erosion rates from fields in this study were at or above T-value, while most rates from native vegetation were less than T-value.

The Science-based Trials of Rowcrops Integrated with Prairies (STRIPs) project through Iowa State University at Neal Smith NWR has had similar results. The project is looking at the impacts of integrating small strips of prairie within row-cropped agricultural landscapes. Treatments consist of varying proportions of perennial vegetation within a row crop system. The 10 percent perennial vegetation treatments either have the perennial vegetation all at the bottom of the watershed or in contour strips distributed from the lower to the upper portions of the watershed. The 20 percent perennial vegetation treatment has contour strips distributed across the watershed. Two additional watersheds located adjacent to the study area with 100 percent reconstructed native prairie are also included for comparison. Preliminary data shows that from 2008 to 2012 soil lost from watersheds that contain 100 percent agricultural fields

ranged from over 19,000 lbs./acre/year to over 1,000 lbs./acre/year. Soil lost from watersheds with the 20 percent perennial vegetation treatment ranged from 960 lbs./acre/year to 32 lbs./acre/year. Soil lost from watersheds with 100 percent reconstructed native prairie ranged from 300 lbs./acre in 2010 to 118 lbs./acre in 2011. Therefore, wetland and grassland cover types like those in the district are not only contributing less to soil erosion but are also trapping runoff water, soil, and nutrients from adjacent agricultural land. Furthermore, as this positive effect ripples across the landscape, downstream infrastructure including roads, culverts, and bridges are protected from the force of sedimentation and water as well.

Current Management

The soil resource is currently managed indirectly through habitat and vegetation management. Conversion from agricultural row crops to perennial grassland and wetland cover, permanent protection of remnant prairie, restoration of existing non-native grassland, restoration of pothole hydrology, and the use of prescribed fire all affect the soil resource.

Effects

Direct, Indirect, and Cumulative

Indicators used for evaluating effects on the soil resource include the following:

- Erosion: The removal of soil and/or rock from a surface (typically by wind or water), and the subsequent transport and deposition of these materials in another location.
- Structure: The arrangement of solid particles that compose a soil and the space between them. This indicator includes compaction and consolidation—pressure or stress applied to a soil surface causing densification as air (compaction) and water (consolidation) are displaced from the pores between the soil grains. Structure influences the movement of air, water, and nutrients; erosion potential; as well as biological activity such as burrowing animals, soil organisms, root growth, and seedling success.
- Profile: The horizontal stratification of soil layers, which differ by physical characteristics such as particle type and texture.

The intensity categories for determining effects on the soil resource are defined as the following:

- Negligible: No measurable or detectable effect
- Minor: Slight effect; there may be a detectable change
- Moderate: Clearly detectable effect, appreciable change, noticeable, and potential to remove small quantities of additional soil
- Major: Permanent loss or alteration of soil, large change, and strong likelihood to remove large quantities of additional soil

The effects on the soil resource from implementing the various alternatives described above were determined to be the following:

Beneficial, Long-Term, Minor, Landscape

For Alternatives A and C, restoring cropland, which may include some food plots, and new acquisition to perennial grassland or wetland would have an effect on soil erosion by stabilizing the soil, protecting it from rain and wind, absorbing precipitation by storing it rather than allowing it to run off, and slowing down any runoff that does occur. Areas that are restored to perennial native grassland and wetland cover would also have localized effect on soil structure by adding to the organic layer over time as the vegetation naturally dies and decomposes. Soil with *native* perennial cover may have greater stabilization and a thicker organic layer as most native species, especially in grasslands, have deeper roots and some have greater above-soil biomass.

Beneficial, Long-Term, Moderate, Landscape

For Alternatives B and D, focusing on restoring cropland, which may include some food plots and new acquisition, to perennial grassland or wetland would have an effect on soil erosion. This restoration would stabilize the soil, protect it from rain and wind, absorb precipitation by storing it rather than allowing it to run off, and slow down any runoff that does occur. Areas that are restored to perennial native grassland and wetland cover would also have localized effect on soil structure by adding to the organic layer over time as the vegetation naturally dies and decomposes. Soil with diverse native perennial cover, compared to native perennial cover and non-native cover, may have greater stabilization and may gain a thicker organic layer as most native species, especially in grasslands, have deeper roots and some have greater above-soil biomass.

Other conservation agencies are also restoring cropland to perennial grassland or wetland on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on the soil resource as described above.

Adverse, Long-Term, Negligible, Local

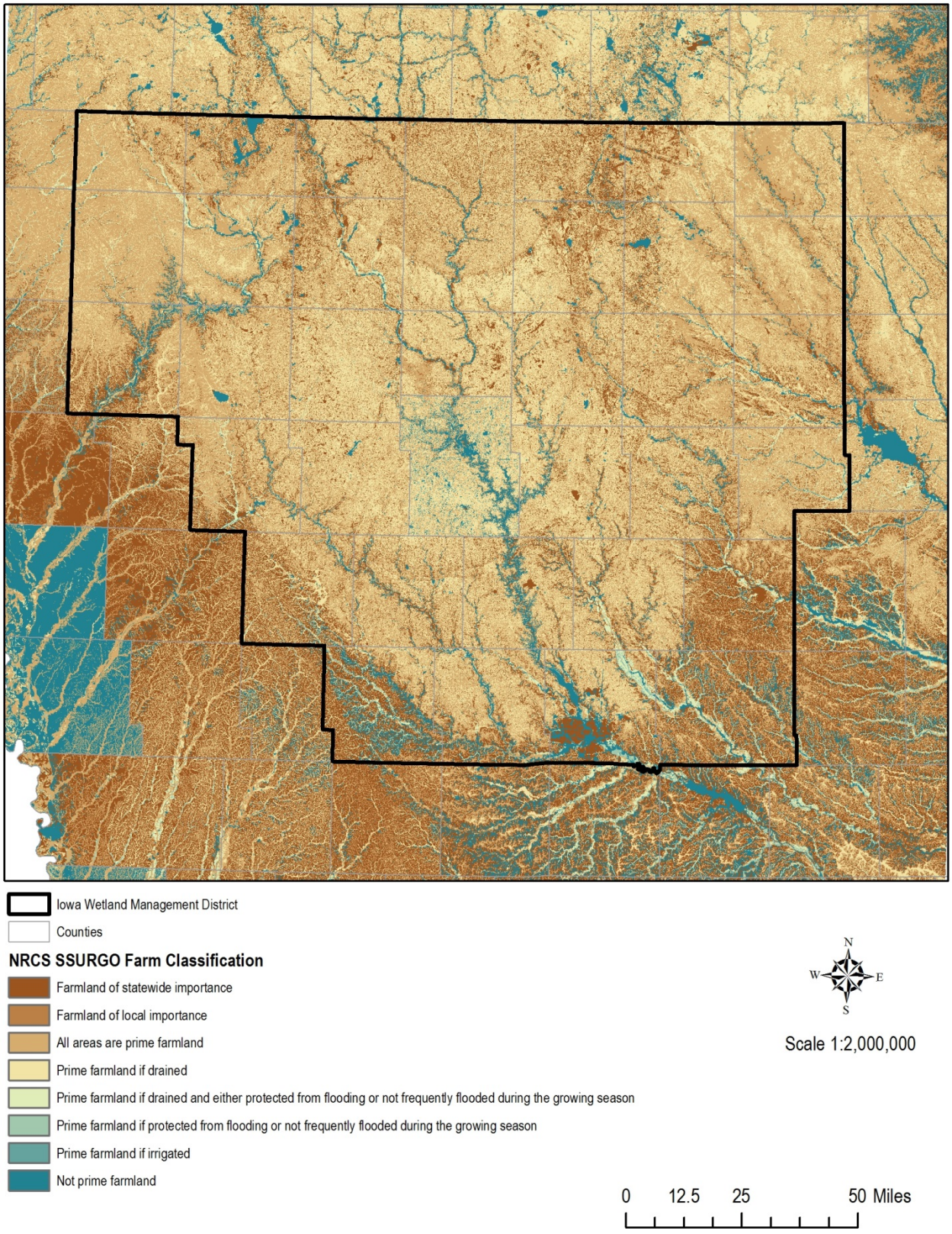
For Alternatives C and D, any areas with increased visitor use that results from providing appropriate recreational opportunities may have increased compaction from foot traffic, although this would likely not be measurable. In sites where new facilities such as kiosks, trails, and pull-offs are constructed to improve district awareness and understanding, there would be localized movement of small amounts of soil for the footers or foundation; however, that would likely not be noticeable. Soil erosion associated with these activities would also likely be undetectable.

Other construction and use activities are also occurring within the district both on public and private land. However, most of them have a local effect, which is diminished once the activity has stopped and the areas are re-vegetated. Specific projects are unknown, but are not likely to have a large adverse impact on the overall landscape.

Water Resources

Iowa's Des Moines Lobe forms the southernmost extent of the PPR of central North America. It terminates at the confluence of the Des Moines and Raccoon Rivers of which the Raccoon forms the southern and western border of the lobe. Small potholes and large, open water lakes are scattered throughout the landscape.

Figure 4-3: Soils of the Iowa WMD



Prairie Potholes

Prior to agricultural drainage, this region contained abundant wetlands, many associated with "prairie potholes" or "kettles" evident from the General Land Office (GLO) surveyors' maps and notes (figure 4-4). Recent geologic studies of the Des Moines Lobe have changed ideas concerning the origin and hydrology of these wetlands and their relationship to other aspects of the landscape. Geologists previously thought that Iowa's potholes and kettles formed when chunks of buried glacial ice melted to create isolated, bowl-shaped depressions on the freshly exposed land surface between 14,000 and 11,500 years ago. These depressions were thought to be "closed," having no drainage outlets. More recently, detailed examination of aerial photographs and subsurface earth materials has revealed that many of these depressions are only partially closed; they actually join with neighboring depressions to form linked systems.

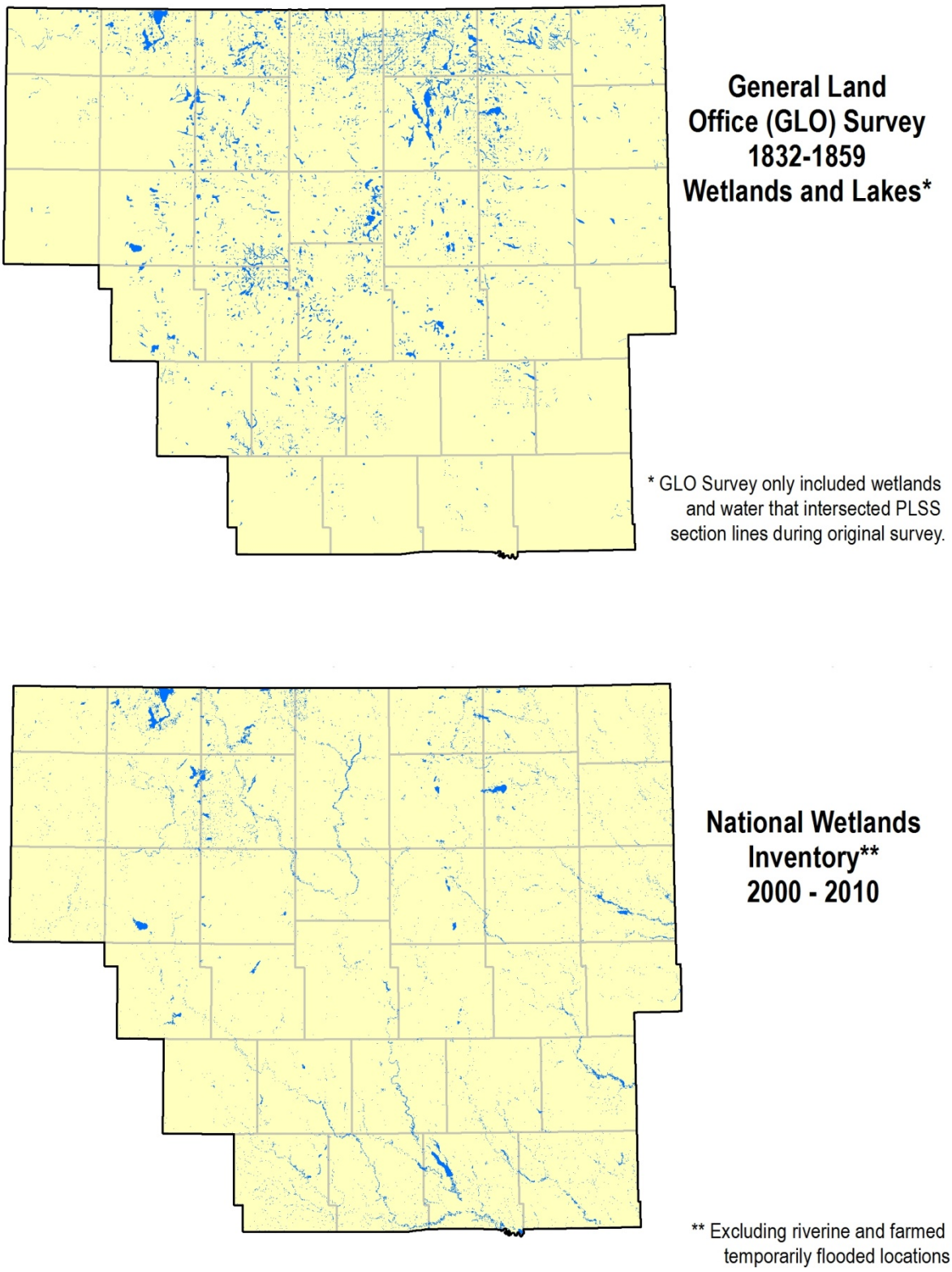
Prairie Pothole

While subtle features on the ground, the linked depression systems stand out as dark web-like patterns when viewed from the air. The links outline the routes of former meltwater channels, and some of these actually connect drainage ways that today lie in two separate surface drainage basins. The linked-depressions originated as part of a glacial karst system that developed in a stagnant glacier loaded with sediment. As the glacier's surface melted, water entered cracks in the ice and began to widen and deepen. These eventually formed drainage tunnels within the stagnant glacier that joined with other drainage ways near the base of the ice. As water flowed through the system, sediment within the ice also entered the tunnels. Over time, fine-grained silt and clay were flushed from the tunnels, but more coarse sand and gravel settled along the routes. When all the ice was melted, the former branching passages, with their permeable sand and gravel deposits, were preserved as linked systems set into and intermingling with other surrounding glacial materials.

The real importance of this finding is in ground water quality. Rather than the sluggish ground water system previously envisioned for large parts of the Des Moines Lobe, the linked depressions actually act as a system of "natural drainage tiles" that join poorly drained upland areas with surface waters. This linkage provides a previously unrecognized pathway for dissolved contaminants, such as crop nutrients, to enter the region's waters (Iowa DNR, 1997).

Historically, these depressions provided an infiltrative hydrology, allowing surface water to be collected, stored, and gradually released to larger streams and underground aquifers. However, for nearly a century and a half, farmers drained, dredged, and tiled the wetlands and small streams on the Des Moines Lobe until approximately 99 percent were gone (figure 4-4). Larger streams and rivers were dredged and straightened for faster removal of surface water. Today, the landscape looks much different, dominated by agriculture that consists primarily of corn and soybeans. This alteration has led to an imbalanced hydrological regime. In the upstream or headwater portion of small streams, water moves off the land much faster, allowing greater stream bank and bed erosion, creating increased transport and deposition of materials (including soil and agricultural chemicals), along with more severe flooding downstream.

Figure 4-4: Historic and Existing Wetland Comparison of the Iowa WMD



Draining of wetlands has lowered the water table, causing natural underground springs and small streams to stop flowing. Most of these hydrological changes have occurred within a human lifetime (Anderson, 2001).

Watersheds and Rivers

Historically, small prairie streams, meandering through the tall grasses, subtly linked the marshes, sloughs, and wetlands to larger streams and rivers, making it difficult to determine exact watershed boundaries. Today, after improved drainage from both natural and anthropogenic causes, the watersheds of the district are more easily defined. The western most portion (about one-third) of the district drains to the Missouri River, while the rest of the district drains to the Mississippi River. The primary watersheds, from west to east include the Missouri-Little Sioux, Des Moines, and Upper Mississippi-Iowa-Skunk-Wapsipinicon. Major rivers that run through the district include the Little Sioux, Des Moines, Raccoon, Iowa, Cedar, Shell Rock, Upper Iowa, Boone, Winnebago, and Skunk (figure 4-5).

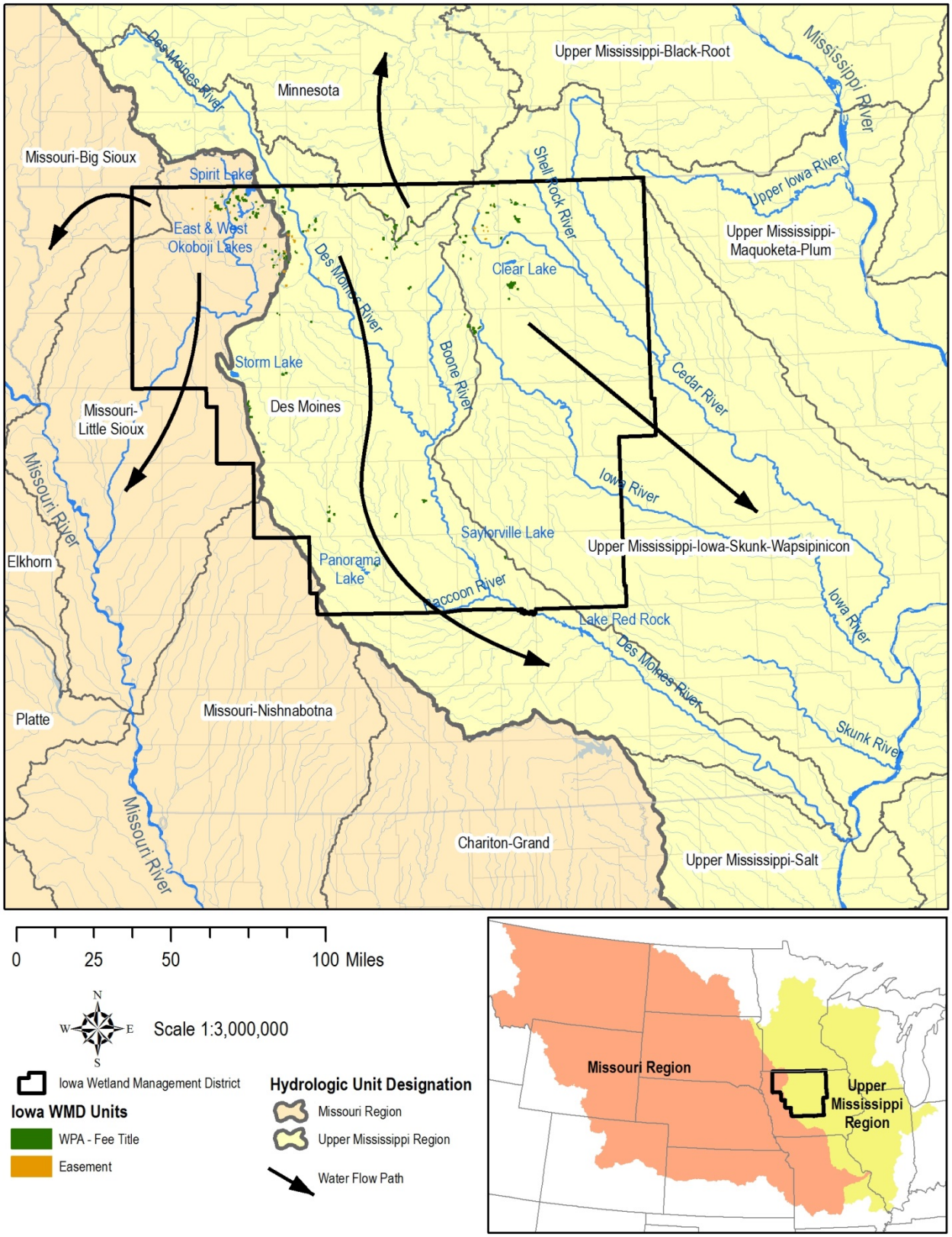
Many of these rivers have been environmentally degraded since they have been dammed, deepened, straightened, and rerouted to better regulate flood control and allow for development. Only the Boone and Upper Iowa do not have stretches within the district listed as impaired on the Iowa Impaired Waters List for 2010. However, several stretches of the Upper Iowa outside the district are listed as impaired. Reasons for listing include concerns for human health (fish consumption), aquatic life, and primary contact—recreation due to high levels of bacteria, mercury, and unknown impacts on freshwater mussels (Iowa DNR, 2010).

Lakes

The district includes many lakes, large and small, shallow and deep (figure 4-5). Saylorville Lake near Des Moines is a large man-made lake completed in 1977 as interest in flood protection for the city of Des Moines peaked after several major floods of the Des Moines River. Spirit Lake, East Okoboji Lake, and West Okoboji Lake near Spencer are Iowa's largest natural (glacial) lakes and have become known as the Iowa Great Lakes. Storm Lake near the City of Storm Lake is Iowa's fourth largest natural lake, while Lake Panorama near Guthrie Center is Iowa's largest private lake. Clear Lake near Mason City is another large natural lake of Iowa. Saylorville, West Okoboji, Spirit, and Clear lakes are all listed as impaired waters for the state due to high levels of bacteria (Iowa DNR, 2010).

Shallow Lake

Figure 4-5: Watersheds, Rivers, and Lakes of the Iowa WMD



Drainage and Pesticides

The PPR of Iowa has been drastically altered since settlement. The glaciation that created this area left a landscape that was flat to rolling with few well defined drainage networks. Wetlands were connected by small, subtle prairie streams. Dense, deep-rooted vegetation and poorly developed drainage resulted in an infiltrative hydrology. Water was collected, stored, and slowly released to larger rivers and underground aquifers. This is in stark contrast to the present conditions in Iowa's PPR. Streams and drainage ways have been deepened and straightened. Thousands of miles of drainage tile have been installed. The once vast prairie has been replaced with corn and beans. The result is a landscape that removes water quickly and increases soil erosion, nutrient and pesticide transport, and downstream flooding. Hydrologic changes in the landscape go far beyond the loss of the vast majority of the wetland basins. The water table has been lowered significantly, and both surface and subsurface drainage patterns have been drastically altered.

Drainage Tile Installation

Since Waterfowl Production Areas (WPAs) are only islands in this sea of intensive agriculture with highly altered drainage patterns, the frequency, intensity, and duration of water flowing into many units is abnormally high. Siltation, nutrient loading, and contamination from point and non-point sources of pollution are a serious problem on many WPAs. WPAs are also threatened by farming trespass, dumping, wildfires, and pesticide applications on adjacent agricultural land. A study in Ontario, Canada examined the effects of habitat and agricultural practices on birds breeding on farmland and determined that the most important variable decreasing total bird species abundance was pesticide use (Freemark and Csizy, 1993).

Recent changes in agriculture have accelerated the impact of pesticides on surrounding land. Genetically altered Roundup® ready corn, soybeans, cotton, and sugar beets have expanded the window of opportunity for pesticide applications and promises to kill everything green on fields except the genetically altered crops. Another altered crop, Bt. Corn, contains a genetically engineered insecticide. Even the pollen from this plant can kill certain insects, such as monarch butterflies.

Research has shown that insecticides commonly used for sunflowers, soybeans, and corn can kill wildlife directly and indirectly by decreasing the amount of food available. For example, ducks feed on grain much of the year, but in the spring they shift to aquatic invertebrates such as insect larvae, amphipods, and snails and depend on this food source for reproduction and survival. Even when aerial insecticide applications are completed carefully and wetlands are avoided, the chemicals drift into wetlands in measurable amounts and kill aquatic invertebrates (Tome et al., 1991 and Grue et al., 1986).

Insecticides have a direct effect by killing aquatic invertebrates, but herbicides also have an indirect effect on food available to waterfowl. The U.S. Fish and Wildlife Service (FWS, Service)

conducted a study of the impact of agricultural chemicals on selected wetlands in four WMDs in Minnesota (Ensor and Smith, 1994). Herbicides from surrounding agricultural land enter wetlands and disrupt the functional interaction between vegetation structure and aquatic invertebrate life. The changing dynamic reduces food available to breeding waterfowl.

Seasonal and semi-permanent wetlands, which are the majority of WPA wetlands, are the most exposed to agricultural chemicals. These wetlands are small and interspersed with croplands, which increases the probability of pesticides from overspray and aerial drift. Most pesticides are applied to crops in the spring and early summer, coincident with maximum runoff and waterfowl breeding. Therefore, prairie pothole wetlands may involve interactions of multiple herbicides and possibly insecticides creating a unique “chemical soup" in each individual wetland (Ensor and Smith, 1994). Ensor and Smith’s study showed that "typical agricultural use" of pesticides on surrounding land had a significant impact in reducing the biological quality of WPA wetlands.

The extensive open ditches and drainage tile also play a critical role as conduit for the transmission of exotic species into wetlands. Rough non-native fish species such as carp can reside in ditches and drainage tile surviving even low dissolved oxygen levels. These fish travel upstream through ditches and tile reaching wetlands, where they cause turbidity in the water, disturbing wetland soils, and preventing aquatic plant growth.

Current Management

At the district level, water resources are primarily managed indirectly through habitat and vegetation management. For example, the planting of perennial grassland cover around district wetlands provides a protective buffer that reduces silt and nutrient loading of the wetlands. However, some district wetlands use water control structures to allow the manipulation of water levels for management purposes such as rough fish control, wetland revegetation, or the prevention of negative impacts to adjacent private cropland. In fact, agricultural drainage activities are the biggest challenge for the district when implementing management actions. Wetland restoration in the district must be carefully orchestrated as not to interrupt drainage on adjacent private land. In many cases, drainage must be maintained across WPAs so neighboring fields continue to drain. This often involves outletting tile into district wetlands, rerouting tile and/or replacing tile with nonperforated pipe, and/or installing water control structures. As mentioned above, this water brings excessive soil and nutrient runoff from adjacent crop fields into the wetlands in the district. Restoring wetlands in this landscape have foreseen consequences. If a restorable wetland is connected to a surface ditch, the restored wetland may act as a sediment retention basin and not function as a true wetland. This effects the vegetation in the wetlands and ultimately waterfowl production in those wetlands.

Effects

Direct, Indirect, and Cumulative

Water resources refer to surface, ground, and atmospheric water. Indicators used for evaluating effects on water resources include the following:

- Water quantity: Water delivery (source, amount, rate, and distribution), water movement (pathways), and water storage (duration and frequency of inundation)
- Water quality: Sedimentation, turbidity, nutrients, and heavy metals

The intensity categories for determining effects on water resources are defined as the following:

- Negligible: No measurable or detectable change
- Minor: May be a detectable change
- Moderate: Clearly detectable change
- Major: Substantial and/or permanent change

The effects on water resources from implementing the various alternatives described above were determined to be the following:

Beneficial, Long-Term, Minor, Landscape

For Alternatives A and C, even though the primary function of wetlands within the district is to produce waterfowl, once properly restored, wetlands also act like a sponge, slowing and filtering water moving down the landscape and underground. This improves water quality by catching sediment, filtering nutrients, and absorbing water. With a more natural hydrologic cycle, nutrients and water are stored in the soil and vegetation reducing runoff and slowing evapotranspiration.

Similarly, in the uplands, restoring cropland—which may include some food plots and new acquisition—to perennial grassland has a positive effect on water quantity by intercepting rain before it hits the soil, allowing water to infiltrate and thereby slowing down and minimizing runoff. Areas restored to native grassland will better protect against soil moisture loss during a drought event as well. Both uplands and wetlands with native perennial cover better protect water quality and balance water quantity in heavy rain events.

Finally, focusing restored wetlands within a watershed serves a secondary purpose of protecting water quality. The more wetlands that are restored closer to the top of a watershed and the more interception with water, sediment, and nutrients moving across the landscape, the cleaner the water quality is in the central, lowest water body in the watershed. Restoring uplands within a watershed to perennial grassland has an even greater effect on water quality overall rather than just restoring individual wetlands and lakes.

Beneficial, Long-Term, Moderate, Landscape

The effects for Alternatives B and D are the same as those listed above under *Beneficial, Long-Term, Minor, Landscape* in addition to the following:

With a focus on restoring cropland to perennial grassland, the quality of upland cover and the rate at which it would change would have a larger and immediate effect on water quality than slowly converting smaller areas over time.

Other conservation agencies are also restoring cropland to perennial grassland or wetland on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on water resources as described above.

Adverse, Short-Term, Negligible, Local

For Alternatives C and D, localized decrease in water quality from increased runoff and erosion could lead to increased nutrient loading or sedimentation from potential future facility construction such as kiosks, trails, and pull-offs. This effect would be so minor; it would likely not be measurable. Any effect would mostly be eliminated once some of the disturbed areas were re-vegetated.

Other construction and use activities are also occurring within the district both on public and private land. However, most of them have a local effect, which is diminished once the activity has stopped and the areas are re-vegetated. Specific projects are unknown but are not likely to have a large adverse impact on the overall landscape.

Air Quality

Iowa's rural setting tends to promote better air quality than some other states in the Nation. However, Iowa's tradition as a working lands state, especially agriculturally, actually exposes its air to numerous potential sources of pollution. Existing air quality within the district is subject to air pollutants from the following:

- Internal combustion engines, including vehicles, tractors, outboard motors, and chainsaws
- Agricultural sources, including livestock confinements and field dust
- Private sources, including burning brush piles
- Industrial sources, including factory and other large industry output in larger cities

Current Management

While several district management activities, such as using chainsaws, seeding cropland to native prairie, and driving trucks and tractors, release pollutants into the air, perhaps the activity of most concern regarding air quality is prescribed fire. Prescribed fire is one of the basic tools used to achieve a variety of management objectives in the fire dependent tallgrass prairie ecosystem within the district. Tallgrass prairie evolved with recurring fire and is therefore dependent on recurring fire for maintenance.

While prescribed fire affects air quality by releasing particulates and pollutant gases, it is only a sporadic and temporary source of air pollution. Air quality impacts are short-lived since a specific burn plan is written, indicating, among other variables, particular wind requirements (direction and speed) for igniting any given fire. Wind typically dissipates smoke rapidly. Approximately 5,000–7,000 acres of habitat are burned in the district each year either for restoration or maintenance of grasslands. This acreage will likely increase if the district continues acquisition. Presently, the vast majority of prescribed fire occurs in the spring with little accomplished in the fall. There is a desire for more autumn and summer prescribed fires; however, a variety of factors makes this challenging. Overall careful planning and good communication has reduced negative impacts to neighbors and sensitive facilities in the area.

Effects

Direct, Indirect, and Cumulative

Indicators used for evaluating effects on air quality include the following:

- Air emissions: The introduction of solid particles, liquid droplets, or gasses (i.e., chemicals, particulate matter, biological materials) into the atmosphere from natural or anthropogenic sources
- Visibility: The transparency of the air, or distance at which objects or light can be clearly discerned as a result of the absorption and scattering of light by particles and gases in the atmosphere

The intensity categories for determining effects on air quality are defined as the following:

- Negligible: No measurable or detectable effect
- Minor: Slight effect, causing a change
- Moderate: Clearly detectable effect, appreciable change
- Major: Substantial, highly noticeable change locally or regionally

The effects on air quality from implementing the various alternatives described above were determined to be the following:

Beneficial, Long-Term, Minor, Landscape

For all alternatives, restoring cropland to perennial grassland or wetland would stabilize soils, reduce wind-blown particulate matter, and increase the amount of carbon dioxide absorbed from the atmosphere and stored as carbon in biomass and soils. See the U.S. Department of Agriculture Natural Resources Conservation Service Air Quality site: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/air/quality/?cid=stelprdb1047144.

Other conservation agencies are also restoring cropland to perennial grassland or wetland on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on air quality as described above.

Adverse, Short-Term, Minor, Local

For alternatives C and D, there could be a localized increase in emissions from operation of vehicles or heavy equipment associated with potential future facility construction such as kiosks, trails, or pull-offs or increased public use.

Other construction and use activities are also occurring within the district both on public and private land. However, most of them have a local effect, which is diminished once the activity has stopped and the areas are re-vegetated. Specific projects are unknown, but are not likely to have a large adverse impact on the overall landscape.

Adverse, Short-Term, Major, Local

For all alternatives, with more land in perennial cover than row crop and continued acquisition, prescribed fire may be used more as a management tool, causing localized increases in emissions from smoke. However, grazing, mowing and haying will likely also be used as management tools to accomplish some of the same objectives as prescribed fire.

Other conservation agencies and some private landowners within the district utilize prescribed fire as a management tool as well. If multiple fires were burning at the same time, there would be a larger impact from smoke emissions. However, most conservation agencies follow similar burn plans in regards to weather conditions, wind direction, notifying local residents, etc. It is unlikely that there would be enough fires burning at the same time to have a large adverse effect on the landscape, especially since the limited conservation agency staff in Iowa often works together to accomplish burning and can only burn so may acres at a time.

Habitat

Often called the Prairie Pothole Region, the Des Moines Lobe was glaciated up until 12,000 years ago. As the glaciers receded, the lobe that extended into north-central Iowa left behind 7.6 million acres of grasslands, with the tallgrass prairie biome as a prime example, and two to three million acres of wetlands and small interconnected swamps. This prairie/wetland complex evolved under the influence of climate and processes such as fire and grazing. After the glaciers receded, the climate became much warmer and drier. This change led to a dramatic expansion of prairie over a period of several thousand years. About 3,000 years ago, the climate turned cooler and wetter. This should have favored the expansion of trees, but the prairie in Iowa was maintained by regular fires and grazing by large herbivores. However, in the late 1800s, Iowa suffered significant losses in wetland and grasslands as settlers began converting the rich soils of these habitats to cropland. Nonetheless, this region contains some of Iowa's finest remnants of the tallgrass prairie (figure 4-6). Prairie bush clover (*Lespedeza leptostachya*), a plant endemic to the upper Midwest, is found on some of these remnants (Eilers and Roosa, 1994).

Based on the Potential Natural Vegetation data derived from the USDA Natural Resources Conservation Service, Soil Survey Geographic database soil descriptions, historically over 90 percent of the district was prairie; over six percent was savanna and just over one percent was forest (figure 4-7). Pothole wetlands were not uniquely identified as a habitat type; however marsh, bog, muck/peat, and water were identified (figure 4-7). Since not much of these categories show up in the district, it is likely that the pothole wetland habitat is included in prairie, considered “wet prairie.” Currently, over 80 percent of the district is in row crop agriculture while nearly eight percent is developed. Surprisingly, seven percent remains in grassland agriculture or herbaceous cover. Finally, two percent is forested and just over one percent is wetlands (figure 4-8).

During the Comprehensive Conservation Plan (CCP) planning process, a vegetative cover type Geographic Information System (GIS) layer was created. Aerial photography interpretation was used to classify the vegetation covering the district into several general categories including agriculture, developed, disturbed, grassland, open water, trees, and wetland. This layer was compared to a similar layer created by the Iowa DNR a couple of years ago; however, that layer did not include WPAs managed by Union Slough NWR (within the district) or the district’s newest acquisitions. Table 4-1 summarizes the number of acres per cover type category.

Figure 4-9 displays one WPA as an example showing the layer that was created during the CCP planning process.

Table 4-1: Iowa WMD Vegetative Cover Type Classifications as of Summer 2011

Cover Type	DNR Managed (acres)*	Union Slough NWR Managed (acres)*	Acquired After DNR Classification (acres)*	Total (acres)*
Agriculture	3,385	0	342	3,727
Developed	143	23	0.4	166.4
Disturbed	34	8	1	43
Grassland	13,262	2,839	86	16,187
Open Water	850	54	0	904
Trees	311	93	3	407
Wetland	3,235	276	6	3,517
Total	**21,220**	**3,293**	**438.4**	**24,951.4**

*Acres are based on GIS polygons and calculations, not on legal survey documents.

Figure 4-6: Iowa's Remaining Tallgrass Prairie Remnants

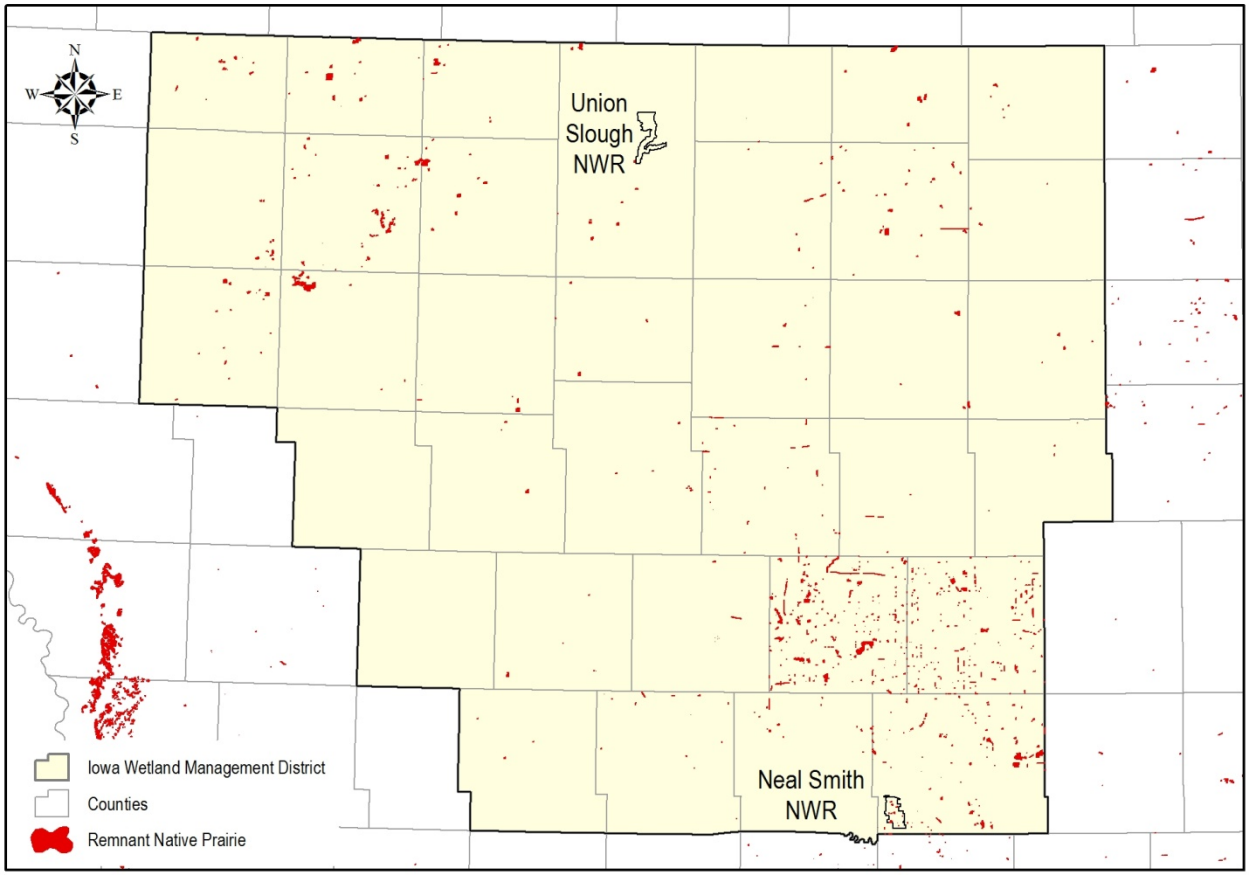


Figure 4-7: Potential Natural Vegetation of the Iowa WMD

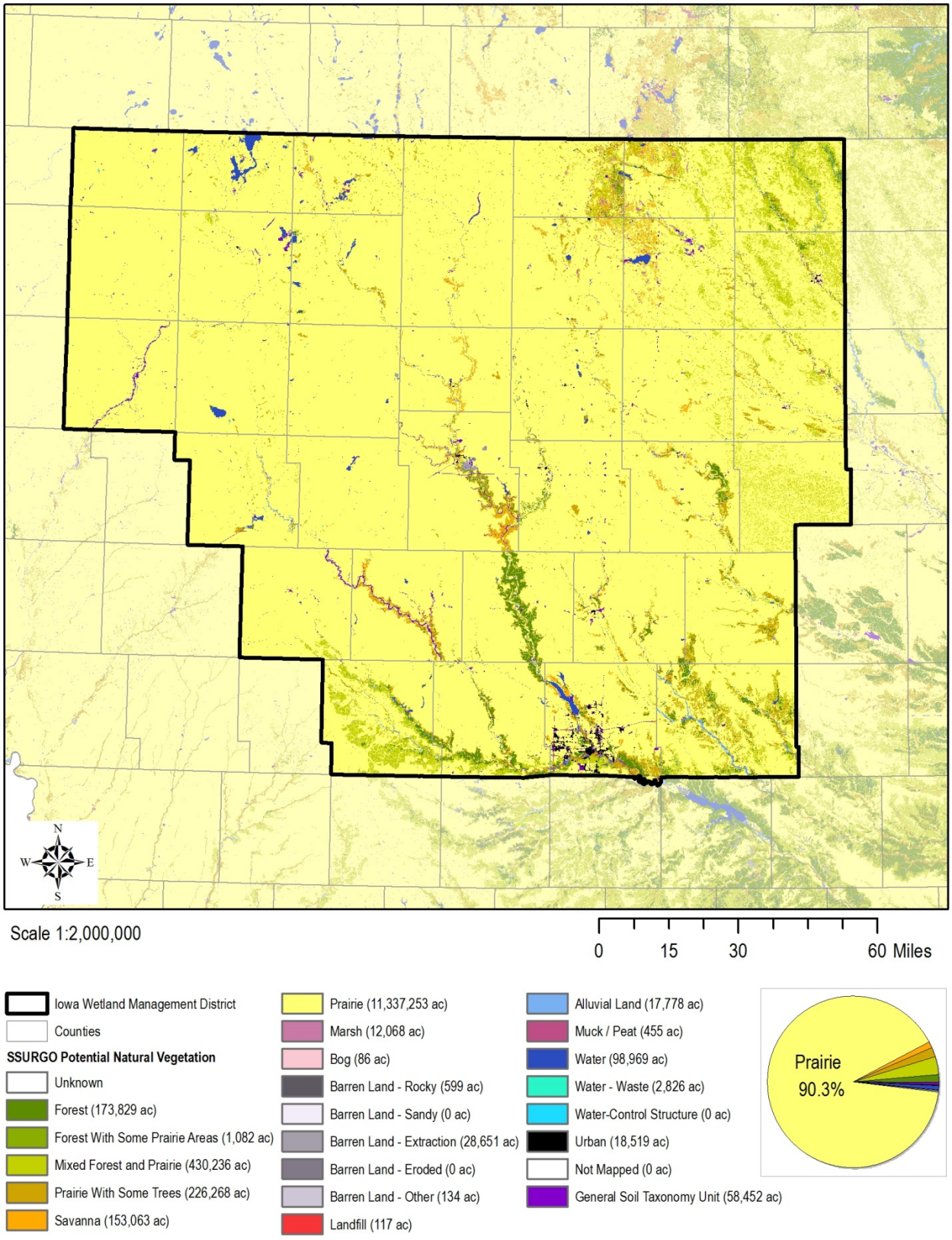


Figure 4-8: National Land Cover (2006) of the Iowa WMD

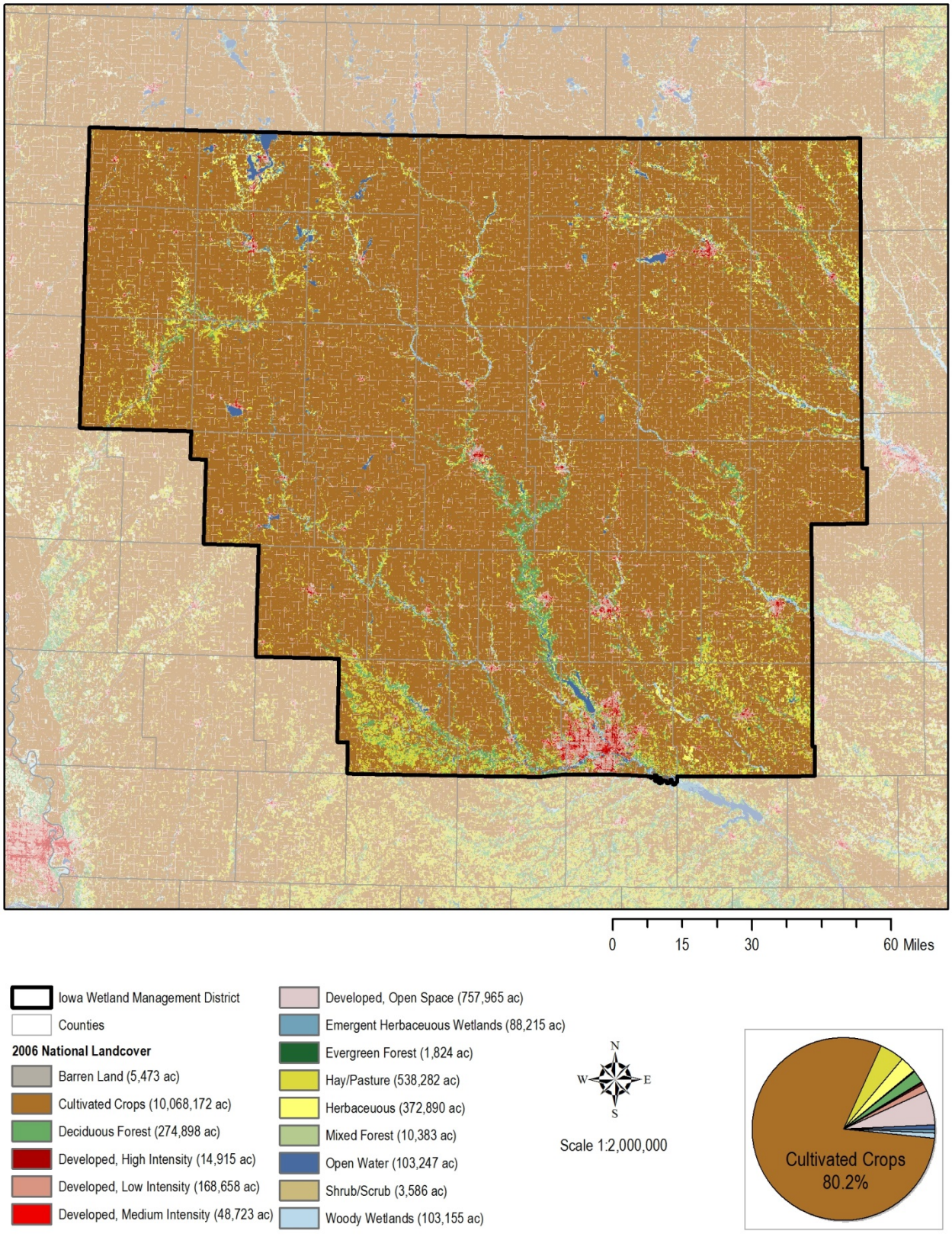
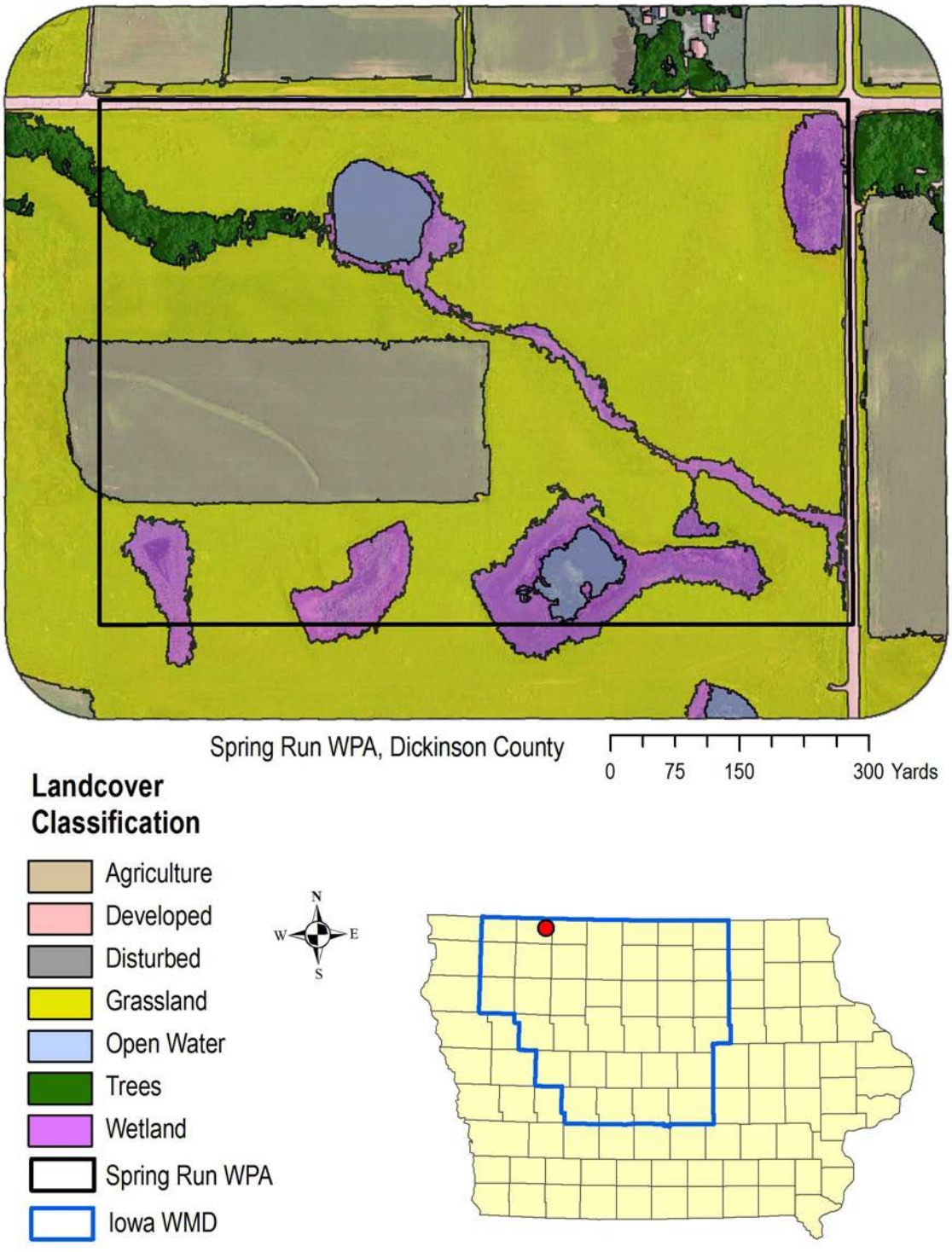


Figure 4-9: Vegetative Cover for Spring Run Waterfowl Production Area in the Iowa WMD



Wetlands

Prairie wetlands and prairie streams are an important part of the prairie ecosystem. The PPR is characterized by numerous, shallow wetlands known as potholes. These wetlands provide essential fish and wildlife habitat, permit ground water recharge, and act as filters of sediment and pollutants. They reduce floods by storing water and delaying runoff. The PPR of more than 300,000 square miles once included about 20 million acres of wetlands; today, only about 5.3 million acres remain in 2.7 million basins within five pothole area states, including Iowa. More than 78 percent of these wetland basins are smaller than one acre in size. They were poorly drained, and in the spring they retained water, acting like a great landscape sponge. Over the course of the season, water drained slowly.

Settlers found the shallow wetlands difficult to farm as the high water table kept the ground saturated for extended periods in wet years. Therefore, the vast prairie pothole wetlands of north central and northwest Iowa took longer to impact. Through the first 20 years of settlement there was plenty of good land available without trying to farm around wet acres. However, in 1850, Congress passed the Swamp Land Act. It directed each county to survey all wetlands and sell them at auction for five cents per acre. County drainage commissions and drainage districts were soon organized. Eventually pothole soils were discovered to be some of the most productive when dry, further accelerating the demand for drainage. When the land was converted to farms, the new owners built drainage ditches, straightened streams, and drained shallow wetlands off their land. Now, in the spring, water rushes off the land and floods the streams and rivers. Drainage has been so extensive that in many areas the water table has been lowered and the hydrology of the entire region has been transformed. In Iowa, 99 percent of pre-settlement wetlands have been lost (from 2.3 million to 26,470 acres), primarily between the 1780s and the 1980s (Noss et al., 1995).

The fluctuating water levels in the shallow wetlands are natural to the dynamic pattern of precipitation in the prairie. The changing water level results in circular bands of vegetation around each basin, because different plant species have different tolerances for saturated soils. The depth of the basin also affects the kind of vegetation that grows. The drying pattern is one of the features used to classify wetland basins. Deeper basins have perennial emergent vegetation such as cattails and dry up every five to 10 years. Wetlands that dry up every other year or on a several year cycle are called semi-permanent or permanent wetlands. Basins that dry up every year are temporary or seasonal wetlands. Some very shallow basins, called ephemeral wetlands, dry up early in the spring after the frost leaves the ground.

Freshwater wetlands like those in the PPR are among the most productive in the world (Weller, 1981). The dynamic water cycle creates a rich environment for many waterfowl and other marsh birds. Cycling water accelerates decomposition of marsh vegetation, resulting in a natural fertilizer. When the basins recharge in the spring, the water becomes a soup of nutrients and supports a diverse and healthy population of aquatic invertebrates, which feed reproducing waterfowl and marsh birds throughout the spring and summer. In the larger basins, the vegetation changes from densely closed cattail (*Typha sp.*) or bulrush (*Scirpus sp.*) cover to open with little cover over a period of years. In the process of transition, the cover vegetation moves through a phase, known as hemi-marsh, when clumps of emergent vegetation are interspersed with open water (Weller, 1981). In this phase, the structure of the vegetation itself creates habitat and stimulates the production of aquatic invertebrates, which in turn hosts the maximum number of marsh birds. Unfortunately, this phase is only temporary and most wetlands cycle out of it in one to three years.

Unfortunately, large-bodied fish appear to be critical determinants of wetland condition. Common carp (*Cyprinus carpio*), bullhead (*Ameiurus sp.*) and other large fish were not historically abundant in Iowa prairie pothole wetlands but now occur in many of these ecosystems and are causing significant problems. Large fish stir up wetland sediment while foraging, which reduces water clarity. Fish foraging activities also increase nitrogen and phosphorus in the water, which stimulates noxious algae blooms. Fish can also physically uproot plants and reduce the number of invertebrates by eliminating their habitat and consuming them. Large fish may be introduced to wetlands when nearby streams and rivers flood. When the flood water recedes, many fish are stranded in the ponds where they often thrive. Fish can also invade wetlands from streams and rivers via constructed drainage ditches (Galatowitsch and van der Valk, 1994).

According to the National Wetlands Inventory, updated over the past several years, the district contains approximately 372,722 wet acres. Those wet acres are either associated with rivers (riverine: 35,498 acres), lakes (lacustrine: 55,065 acres), or marshes, swamps or ponds (palustrine: 282,159 acres). However, nearly 40 percent (107,893 acres) of the palustrine acres are temporarily wet areas that have been farmed through, usually having very little or no wetland emergent vegetation (figure 4-10). The various water regimes for the wet acres in the district are presented in table 4-2.

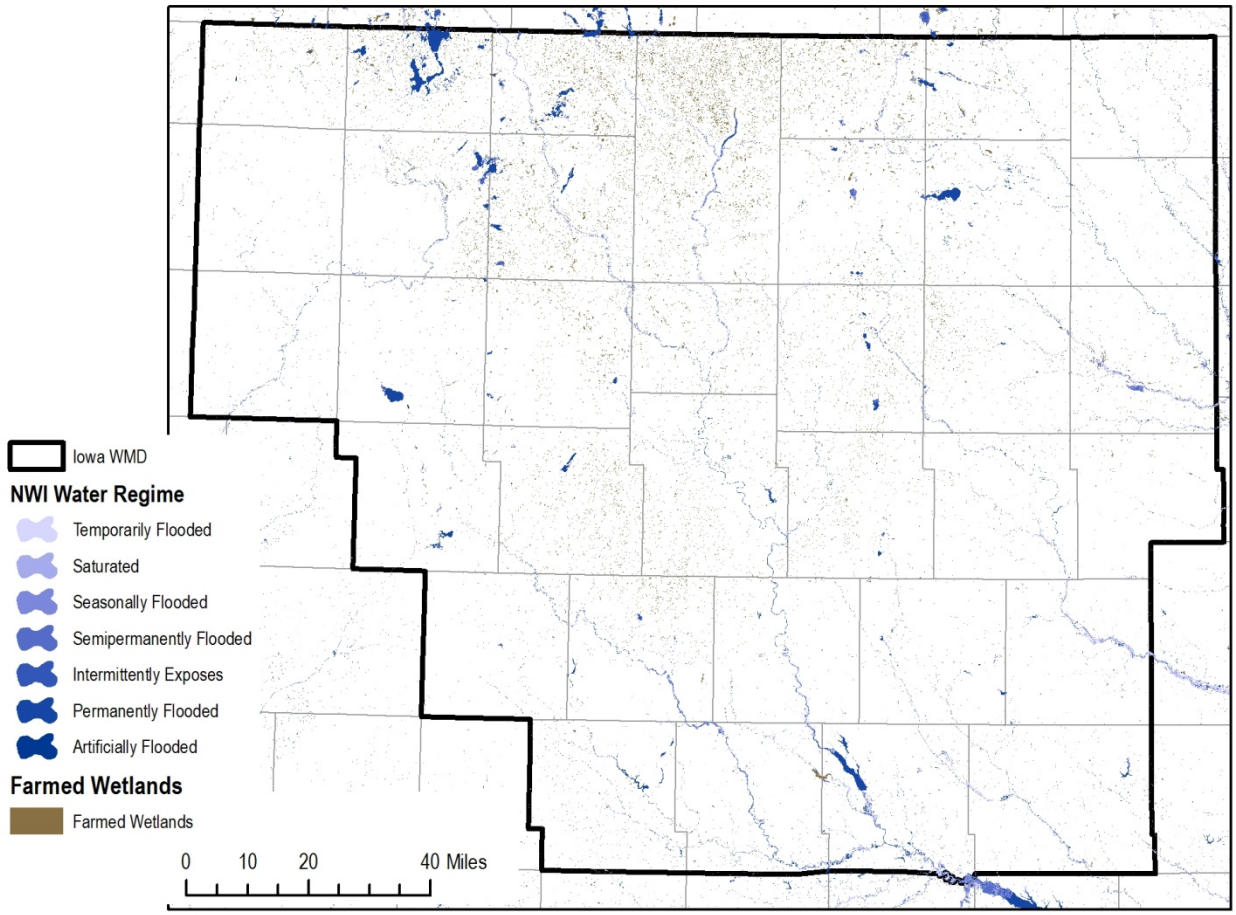
Table 4-2: National Wetlands Inventory Water Regime for the Iowa WMD's Wet Acres

National Wetlands Inventory Water Regime	Acres
None	470
Temporarily Flooded including "ditched and farmed"	194,960
Saturated	1,107
Seasonally Flooded	54,438
Semi-permanently Flooded	19,504
Intermittently Exposed	24,586
Permanently Flooded	75,014
Artificially Flooded	2,642

Current Management

The goal of wetland management in the district is to provide diverse wetland complexes that provide high quality nesting and migratory habitat for waterfowl and other waterbirds. Most new lands acquired for the district have been crop fields for many decades. This has resulted in the draining of all wetlands on the property. After acquisition, one of the first management actions taken on these lands is to restore the drained wetlands. Wetland restoration is accomplished in a variety of ways including the removal and/or alteration of underground drainage tile, the plugging of drainage ditches, the construction of dikes or the installation of water control structures. After restoring the hydrology, most wetlands are allowed to naturally revegetate. Seeding appropriate wetland plants into the various zones of the wetland can increase plant diversity. This is rarely completed due to a lack of appropriate seed source, high cost, and extensive time commitment. The few attempts that have been made to increase plant diversity by seeding wetland areas have been met with mixed results at best. Once restored, the manipulation of vegetation is the primary management action that is being used more often with Iowa DNR zone seedings. Prescribed fire and water level manipulation are the most common tools used to manage wetland vegetation.

Figure 4-10: National Wetlands Inventory of the Iowa WMD



Native Grasslands

The natural prairie of Iowa was more than just a monolithic sea of grass, with some containing 200 plant species. Prairie plants are adapted to subtle changes in moisture and soils that occur along a gradient from lowlands to drier prairie ridges. Poorly drained wetlands and wetland margins supported rank growths of sedges (*Carex sp.*), sloughgrass (*Beckmannia sp.*), cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), and various panicgrasses. Common forbs (constituting 80 percent of the plant species in some areas) included such species as gayfeather (*Liatris pycnostachya*), cup plant (*Silphium perfoliatum*), turk's-cap lily (*Lilium superbum*), prairie clover (*Dalea sp.*), various coneflowers, and New England aster (*Symphyotrichum novae-angliae*). Better-drained loamy soils on slopes and broad ridges were covered with more moderate stands of switchgrass (*Panicum virgatum*), big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), and forbs like compass plant (*Silphium laciniatum*), rattlesnake master (*Eryngium yuccifolium*), smooth blue aster (*Symphyotrichum laeve*), wild indigo (*Baptisia sp.*) and goldenrod (*Solidago sp.*). Drier sites on gravel and sand ridges or steep slopes supported shorter and more open stands of little bluestem (*Schizachyrium scoparium*), sideoats grama (*Bouteloua curtipendula*), and needlegrass (*Stipa sp.*), with forbs like pasqueflower (*Pulsatilla patens*), ground plum

(*Astragalus crassicarpus*), pucoon (*Lithospermum sp.*) and downy gentian (*Gentiana puberulenta*).


Purple Prairie Clover

Today, remnants of prairie and their associated wetlands are scattered and rare across their historic range, especially in Iowa. In fact, all types of tallgrass prairie are considered endangered ecosystems (85–98 percent decline), but tallgrass prairie east of the Missouri River and on mesic sites across its range is critically endangered (>98 percent decline). In Iowa, 99.9 percent of the natural tallgrass prairie has been lost. Remnants totaling approximately 30,000 acres remain mostly on dry and dry-mesic sites too rocky, sandy, dry, or inaccessible to plow (Noss et al., 1995). These remnants form the last refuge for many species of prairie plants and wildlife (Zohrer, 2005).

As is often the case when something reaches levels so low that it is in danger of disappearing completely, tallgrass prairie has enjoyed a resurgence of interest over the last several decades. This has led to more plantings using native species. At first, monotypic stands of switchgrass were planted. Then mixes of three to five species of native grasses were used. Today, many prairie plantings include diverse mixes of native grasses and forbs, often up to 70 species of forbs and grasses. Although they still fall short, these diverse plantings do more closely resemble remnant prairie.

Savannas are areas of scattered, open canopy trees surrounded by tallgrass prairie. The dominant savanna tree species is burr oak (*Quercus macrocarpa*). Historically, pockets of savanna were found in portions of the Des Moines Lobe landform in Iowa. Notably, Winnebago and Worth Counties contained significant tracts of savanna. Savanna is important to bird species such as red-headed woodpecker (*Melanerpes erythrocephalus*), Eastern bluebird (*Sialia sialis*), loggerhead shrike (*Lanius ludovicianus,*) and orchard oriole (*Icterus spurius*).

Current Management

Remnant prairie in the district is managed to provide high quality habitat for migratory birds. It is also important to preserve the remnant prairie for its intrinsic value. Some remnant prairie provides habitat for threatened and endangered species, and in fact, tallgrass prairie is itself an endangered ecosystem. All management activities on these lands occur only after considering the long-term effects they will have on the prairie community, especially effects on any known threatened or endangered species. Common management activities on these lands include prescribed fire, tree and brush removal, invasive species control, haying, and grazing.

The majority of district lands were crop fields when they were purchased. Therefore, most of the upland in the district was seeded with a goal of planting vegetation attractive as nesting cover to waterfowl and other migratory grassland birds. Currently, most new seedings planted

Tallgrass Prairie

in the district are diverse mixes of local ecotype native grasses and forbs. These diverse mixes often contain 50 to over 130 species. Some of the oldest native seedings in the district contain a single species such as switchgrass or big bluestem. There are also intermediate diversity seedings that contain anywhere from a mix of three to seven native grasses to a mix of ten to twenty native grasses and forbs. As the seed mixes evolved from low diversity to high diversity, it became clear that the geographic origin of the seed used was important. Southern ecotype seed will grow in northern Iowa but frequently does not produce viable seed. Varieties from too far north of Iowa tend to be susceptible to disease. Therefore, great care is taken to ensure that all native seedings use appropriate ecotype seed. Once established, planted native grasslands are managed with prescribed fire, tree and brush removal, invasive species control, haying and grazing.

Savanna is not a habitat type that is targeted for purchase by the district. Restoring and managing savanna has little, if any, benefit to ground nesting waterfowl. In fact, savanna habitat is likely to attract avian and mammalian predators that will be a detriment to ground nesting waterfowl. However, some past acquisitions have contained a few small areas that may be degraded savanna. Savanna is an important habitat type; however, it is not currently the district's highest priority. Therefore, the current strategy to manage these savanna areas is passive—to leave them as they are for now.

Non-Native Grasslands

Prior to settlement, most of Iowa was covered with tallgrass prairie. As the state was settled and the prairie was broken up, introduced species gained a foothold. Europeans brought familiar plant species with them as they settled Iowa. Some of these new species were introduced intentionally as pasture "improvement." Other species were introduced by accident from hay that was imported from overseas to feed livestock. Regardless of how they got here, many of these species have flourished since their introduction to Iowa. Grasses like smooth brome (*Bromus inermis*), timothy (*Phleum pretense*), orchardgrass (*Dactylis glomerata*), and Kentucky bluegrass (*Poa pratensis*) are now common grasses throughout Iowa. Broad-leaved plants such as crownvetch (*Coronilla varia*), birdsfoot trefoil (*Lotus corniculatus*), alfalfa (*Medicago sativa*), and Canada thistle (*Cirsium arvense*) are also commonly found in Iowa's grasslands today.

Current Management

There are many acres of non-native grassland in the district. In some cases, the land was purchased with existing stands of the non-native grassland. Hayfields, old pasture or land that had been enrolled by the previous landowner in CRP are frequently covered with non-native species such as smooth brome.

Non-native grasslands are, at times, planted on old crop fields in the district, because they are attractive as dense nesting cover for ducks and other migratory birds. Haying after July 15 is the primary tool used to manage these areas. Waiting until July 15 to mow the grass allows nesting birds a chance to hatch and fledge before the field is cut. Haying controls invasive woody vegetation and invigorates the alfalfa in the stand. Cool season introduced species are also planted at times as firebreaks around building sites or other sensitive areas.

Prescribed fire is also used to manage non-native grasslands. If the fire is conducted in the early spring, it will also invigorate the stand. Fire also works well as a first step in converting the non-native stand to native grassland. The fire removes all the vegetation from a site, and then as the plants resprout, the area is sprayed with a non-selective herbicide, killing the non-native plants and preparing a clean seedbed for the native seeding.

Other Habitats

In the northern part of the lobe, glacial knobs and ridges were partially or wholly surrounded by shallow marshes. The wetlands protected the ridges from frequent prairie fires and promoted the establishment of savannas. These are especially noticeable near Pilot Knob State Preserve. Some of these glacial knobs are known as “dry knobs” and contain such species as sideoats grama, hairy grama (*Bouteloua hirsuta*), prairie junegrass (*Koeleria macrantha*), cutleaf anemone (*Pulsatilla patens*), and little bluestem. Unfortunately, many of these knobs are being highly modified by land use; especially gravel mining (Eilers and Roosa 1994). Conversely, the shallow marshes or wet depressions in the area contain an array of plants most of which are at or near the southern terminus of their ranges. Some of these include watershield (*Brasenia schreberi*), water horsetail (*Equisetum fluviatile*), tall cottongrass (*Eriophorum angustifolium*), common mare’s-tail (*Hippuris vulgaris*), tufted loosestrife (*Lysimachia thyrsiflora*), buckbean (*Menyanthes trifoliata*), cosmopolitan bulrush (*Schoenoplectus maritimus*), and common rivergrass (*Scolochloa festucacea*) (Eilers and Roosa, 1994).

The Des Moines Lobe contained many peatlands and sedge swales as well. The peatlands contained drepanocladus moss, unlike those of the more northern parts of the United States, which are largely composed of sphagnum. However, in this part of the lobe is found the state's only example of a sphagnum bog (called by some researchers a "nutrient-poor fen" or "poor fen"), existing in Pilot Knob State Preserve. Recent palynological evidence indicates that this bog has been present since before Euro-American settlement and is probably a relic from conditions that prevailed at the end of the Pleistocene. A number of rare taxa, such as the following, are found on the floating mat: star sedge (*Carex echinata*), creeping sedge (*C. chordorrhiza*), mud sedge (*Carex limosa*), roundleaf sundew (*Drosera rotundifolia*), slender cottongrass (*Eriophorum gracile*), and bog willow (*Salix pedicellaris*) (Eilers and Roosa, 1994).

The Des Moines Lobe was also known to contain fen habitat. In fact, the northwestern portion of the lobe was thought, until recently, to be the only part of Iowa where fens existed. Today, fens are known to exist on the Iowa surface as well yet exhibit different characteristics. Des Moines Lobe fens are more likely to have a deposit of tufa (calcareous or siliceous rock deposits of springs or ground water) at the surface; are divided into distinctive vegetative zones; lack ferns and are less likely than Iowa surface fens to have trees and shrubs. Plants unique to Des Moines Lobe fens include: cutleaf waterparsnip (*Berula erecta*), tall cottongrass (*Eriophorum angustifolium*), lesser fringed gentian (*Gentianopsis virgata*), Ontario lobelia (*Lobelia kalmia*), Huron green orchid (*Platanthera huronensis*), needle beaksedge (*Rhynchospora capillacea*),

low nutrush (*Scleria verticillata*), hooded lady's tresses (*Spiranthes romanzoffiana*), seaside arrowgrass (*Triglochin maritima*), marsh arrowgrass (*T. palustris*), and lesser bladderwort (*Utricularia minor*) (Eilers and Roosa 1994). In Iowa, 40 percent of potential fen sites and 65–77 percent of actual fens have been destroyed by cultivation or drainage. Most of the remaining fens have been altered or threatened by grazing, cropland edge effects, woody plant invasion, drainage, excavation, or mining (Pearson and Leoschke, 1992).

Historically, forest in Iowa was concentrated in the eastern half of the state along the Iowa, Skunk and Des Moines Rivers and their major tributaries (Thompson, 1992). Today, Iowa's forest is widely scattered as woodlots and wooded margins of streams and rivers. The majority of the forest in the district is found along the middle section of the Des Moines River in Webster and Boone Counties. The Little Sioux River in the western part of the district also contains a fair amount of forest. Guthrie, Jasper, and Dallas Counties contain measurable amounts of forest as well.

Current Management

Currently, glacial knobs and ridges, sedge swales, fens, and peatlands in the district are not generally sought out for specific management. Prescribed fire as well as invasive species control, including tree and brush removal, are the primary management tools used on all these habitat types.

Forest is not a habitat type that is targeted for purchase by the district. Restoring and managing forest has little, if any, benefit to ground nesting waterfowl. Currently, district lands are not restored to or managed as forest.

Effects for all Habitats

Direct, Indirect, and Cumulative

Indicators used for evaluating effects on habitat include the following:

- Species Composition: The number and types of plant life present
- Age Structure: The age-class diversity of plant life present, which is most relevant to forests
- Spatial Distribution and Heterogeneity: The areal extent, location, and pattern of plant life

The intensity categories for determining effects on habitat are defined as the following:

- Negligible: Changes to plant life would not be measurable or would be at the lowest level of detection
- Minor: May be a detectable change, but the change would be slight and have a local effect on plant life
- Moderate: Clearly detectable change or appreciable effect plant life
- Major: Severe alteration of plant life, substantial, and highly noticeable; could result in widespread change to plant life and could be permanent

The effects on habitat from implementing the various alternatives described above were determined to be the following:

Wetlands

Beneficial, Long-Term, Moderate, Local

For all alternatives, restoring cropland, which may include some food plots, to perennial grassland in the uplands will decrease soil and nutrient runoff flowing into the wetlands, which will in turn alter species composition. Reducing nutrient loading to wetland basins will help lessen invasions by reed canarygrass and hybrid cattail and allow more natural, perhaps native species to persist.

Other conservation agencies are also restoring cropland to perennial grassland or wetland on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on wetlands as described above.

Native and Non-native Grasslands

Beneficial, Long-Term, Major, Landscape

For all alternatives, restoring cropland, which may include some food plots, to perennial grassland increases the species composition, age structure, spatial distribution, and heterogeneity of both native and non-native grasslands, depending on what is planted. This is especially true if land acquisition continues and a variety of tools are used to manage those grasslands.

Other conservation agencies are also restoring cropland to perennial grassland or wetland on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on grasslands as described above.

Other Habitats

No Effect

There are no specific activities included in any of the alternatives to directly benefit or have an adverse effect on the species composition, age structure, spatial distribution, or heterogeneity of other habitats including fens, sedge swales, glacial knobs and ridges, peatlands, and forest.

Wildlife

Resident Wildlife

Plants

Plant species found within the district are numerous as 157 species alone are state listed (Iowa National Areas Inventory). Two, prairie bush clover and western prairie fringed orchid (*Platanthera praeclara*) are federal and state threatened; they are discussed in more detail under the Threatened and Endangered Species section below. Forty-eight other species are

also state threatened, 18 species are state endangered, and 89 species are considered to be of special concern in the state (appendix B).

Swamp Milkweed

Mammals

Iowa has 40 species of mammals that are considered common in the state. Appendix B contains a list of 50 mammals known or likely to occur within the district (Iowa Gap Analysis Program [GAP]). The Indiana bat (*Myotis sodalist*) is both federal and state endangered, while the spotted skunk (*Spilogale putorius*) is state endangered. The southern bog lemming (*Synaptomys cooperi*) is considered state threatened, and the flying squirrel (*Glaucomys volans*) is considered of special concern. Mammals extirpated from the state include pygmy shrew (*Sorex hoyi*), eastern woodrat (*Neotoma floridana*), porcupine (*Erethizon dorsatum*), gray wolf (*Canus lupus*), swift fox (*Vulpes velox*), black bear (*Ursus americanus*), marten (*Martes americana*), fisher (*M. pennant*), wolverine (*Gulo gulo*), mountain lion (*Puma concolor*), Canada lynx (*Lynx canadensis*), moose (*Alces alces*), and pronghorn (*Antilocapra americana*).

Fish and Mussels

The water bodies within the district are home to many species of fish and mussels. Historically, Iowa waters were home to approximately 55 species of freshwater mussels; today only about half of those species can be found. Appendix B contains a list of fish species known to occur within the district (Iowa GAP) and mussel species primarily listed as species of greatest conservation need (SGCN) in Iowa (Zohrer, 2005). The Topeka shiner (*Notropis topeka*) is federally and state listed and is discussed in more detail under the Threatened and Endangered section below. Twenty other species are also state listed as threatened or endangered; they are noted in appendix B.

Reptiles and Amphibians

Iowa is home to 66 known species of reptiles and amphibians. Appendix B contains a list of the species known to occur within the district (HerpNet). The wood turtle (*Clemmys insculpta*) is state endangered, while the ornate box turtle (*Terrapene ornata*), Blanding's turtle (*Emydoidea blandingii*) and mudpuppy (*Necturus maculosus*) are state threatened. The smooth green snake (*Opheodrys vernalis*) and bullsnake (*Pituophis catenifer sayi*) are considered of special concern in the state. The eastern garter snake (*Thamnophis sirtalis*) is the only snake species to occur within the district that is not considered "protected"—that is, it is legal to kill or collect them in Iowa.

Insects

The habitats of the Des Moines Lobe contain a great variety of insects, although likely fewer species exist today than in the past. In the prairie, insects are important pollinators and food sources, especially for birds. Moths, butterflies, bees, and wasps are attracted to showy prairie flowers. The great mass of grasses, leaves, and stems provides an abundance of habitat for grasshoppers and other insects. Spittlebugs are responsible for the wet, saliva-like liquid that is found at the base of many grass leaves. Their young cover themselves with a frothy, bubbly liquid after they hatch that protects them from predators, parasites, and the drying wind and sun. Multitudes of ants aerate and mix the rich prairie soil. Insects are literally at the center of life on the prairie as prairie mammals, birds, reptiles, and amphibians need an abundance of insects in their food chains.

Bee Pollinating Purple Prairie Clover

In the wetlands, insects were also important food sources for birds, mammals, reptiles, and amphibians as they outnumbered all other animals. In open waters, insects such as the water boatman (*Corixa sp.*) and backswimmer (*Notonecta sp.*) feed on plants, carrying bubbles of air with them as they make their dives. Water scorpions (Nepidae family), predacious diving beetles (*Thermonectus sp.*), and giant water bugs (Belostomatidae family) are predators that search wetland waters for zooplankton, other insects, and even tadpoles and larger crustaceans. Even the surface film of wetland waters contains insects, mosquito larvae, water striders (Gerridae family), whirligig beetles (*Gyrinus sp.*), and fishing spiders (*Dolomedes sp.*). Above the water, dragonflies and damselflies eat swarms of gnats, flies, and mosquitos; mayflies flutter after a hatch in spring and summer; and butterflies feed on the nectar of wetland flowers.

Threatened and Endangered Species

The district contains seven federally listed species. Three (Least Tern, Topeka shiner, and Indiana bat) are endangered, two (prairie bush clover and western prairie fringed orchid) are threatened. The Dakota skipper and Poweshiek skipperling are listed as candidate species. The district also contains numerous state listed species. Most of these are discussed in their relevant subsections above. The following provides more information on the federally protected species:

Least Tern – Endangered (*Sterna antillarum*)

Least Terns nest along large rivers of the Colorado, Red, Mississippi, and Missouri River systems on barren to sparsely vegetated sandbars, sand and gravel pits, and lake or reservoir shorelines. They winter in coastal Central and South America. Threats to Least Terns include unusable nesting habitat due to human disturbance and alteration of river systems and pesticide use that reduces food availability such as small fish.

Current Management

The Least Tern is currently only in one county of the district, Polk. Its recovery plan calls for protecting, enhancing, and restoring breeding habitat to increase the population to 7,000 birds. However, most of the district does not contain suitable habitat currently, nor is it targeted for future acquisition. The focus for the district is prairie potholes and surrounding uplands that are generally heavily vegetated. Therefore, management of the district has virtually no impact on Least Terns.

Topeka Shiner – Endangered (*Notropis topeka*)

Topeka shiners were historically common in small to mid-sized prairie streams, oxbows, and off-channel pools, in the central United States. Currently, Topeka shiners are found primarily in small, isolated populations in Iowa, Minnesota and portions of South Dakota in small streams that run continually with good water quality and cool to moderate temperatures. Threats to the Topeka shiner include habitat destruction, sedimentation, and changes in water quality. Stream segments in the Raccoon River, Boone River, and Rock River watersheds in Iowa have been designated as critical habitat for Topeka shiners (figure 4-11). Critical habitat is a specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery.

Current Management

Although the district does not target stream habitat for purchase, the Topeka shiner may receive benefits from habitat management within the district. Wetland and grassland restoration on former crop fields can have dramatic impacts on downstream water quality. Most land purchased in the district is cropland. The restoration of grassland/wetland complexes in the district acts to slow the movement of water across the land. This results in a slower release of water to area streams and a corresponding reduction in sediment and other pollutants entering the streams. The Topeka shiner does not currently have a recovery plan.

Indiana Bat – Endangered (*Myotis sodalis*)

Indiana bats can be found hibernating during winter in caves or, occasionally, in abandoned mines and in summer roosting in forest gaps, fencelines, or edges of wooded areas under the peeling bark of dead and dying trees. Indiana bats eat a variety of flying insects found along rivers or lakes and in uplands. Threats to the Indiana bat include human disturbance, commercialization of caves, loss of summer habitat, pesticides and other contaminants, and most recently, the disease white-nose syndrome.

Current Management

Currently within the district, the Indiana bat only utilizes summer habitat in Jasper County. However, this location is not in one of the four priority recovery units; therefore, the recovery plan calls for enhancing and improving habitat on private lands and protecting foraging habitat, water sources, and travel corridors. The recovery plan does not include a specific population objective. The district is primarily managed for waterfowl and other migratory grassland birds; thus, forested land is not targeted for acquisition. In fact, many district resources are expended to prevent and/or remove woody species. Therefore, the majority of the district does not provide

roosting sites for Indiana bats. However, the restoration of grassland/wetland complexes does provide areas that produce insects, which can be important to foraging Indiana bats.

Prairie Bush Clover – Threatened (*Lespedeza leptostachya*)

Prairie bush clover is found in midwestern hill prairies that are dry and gravelly and in thin soil prairies containing big bluestem and Indiangrass—especially in the Little Sioux River and Des Moines River valleys. Prairie bush clover is apparently able to grow in disturbed areas so its population may be stable or, if declining, declining slowly.

Threats to the prairie bush clover include conversion of pasture to cropland, overgrazing, agricultural expansion, herbicide application, urban expansion, rock quarrying, and transportation right-of-way maintenance and rerouting. Hybridization with the more common round-headed bush clover has also been identified as a potential threat in some areas.

Current Management

Prairie bush clover is only in remnant prairie vegetation on a few sites throughout the district. The recovery plan calls for protecting and managing 20 populations in the core area and 15 outside the core area. Five counties within the district are completely within the core area including Dickinson, Clay, Emmet, Kossuth, and Palo Alto; four other counties (Humboldt, Pocahontas, Osceola and O'Brien) are partially within the core area. Management activities occurring in the district that could affect prairie bush clover include prescribed fire, haying, grazing, and invasive plant treatments. Fire promotes healthy prairie plant communities and helps control invasive woody plants that may shade out prairie bush clover. However, fire during the growing season may kill prairie bush clover seedlings. Therefore, most district burns are conducted early enough in the spring that seedlings have not yet emerged. Fire and any other district management action that may affect prairie bush clover are carefully planned to avoid negative impacts to the plant.

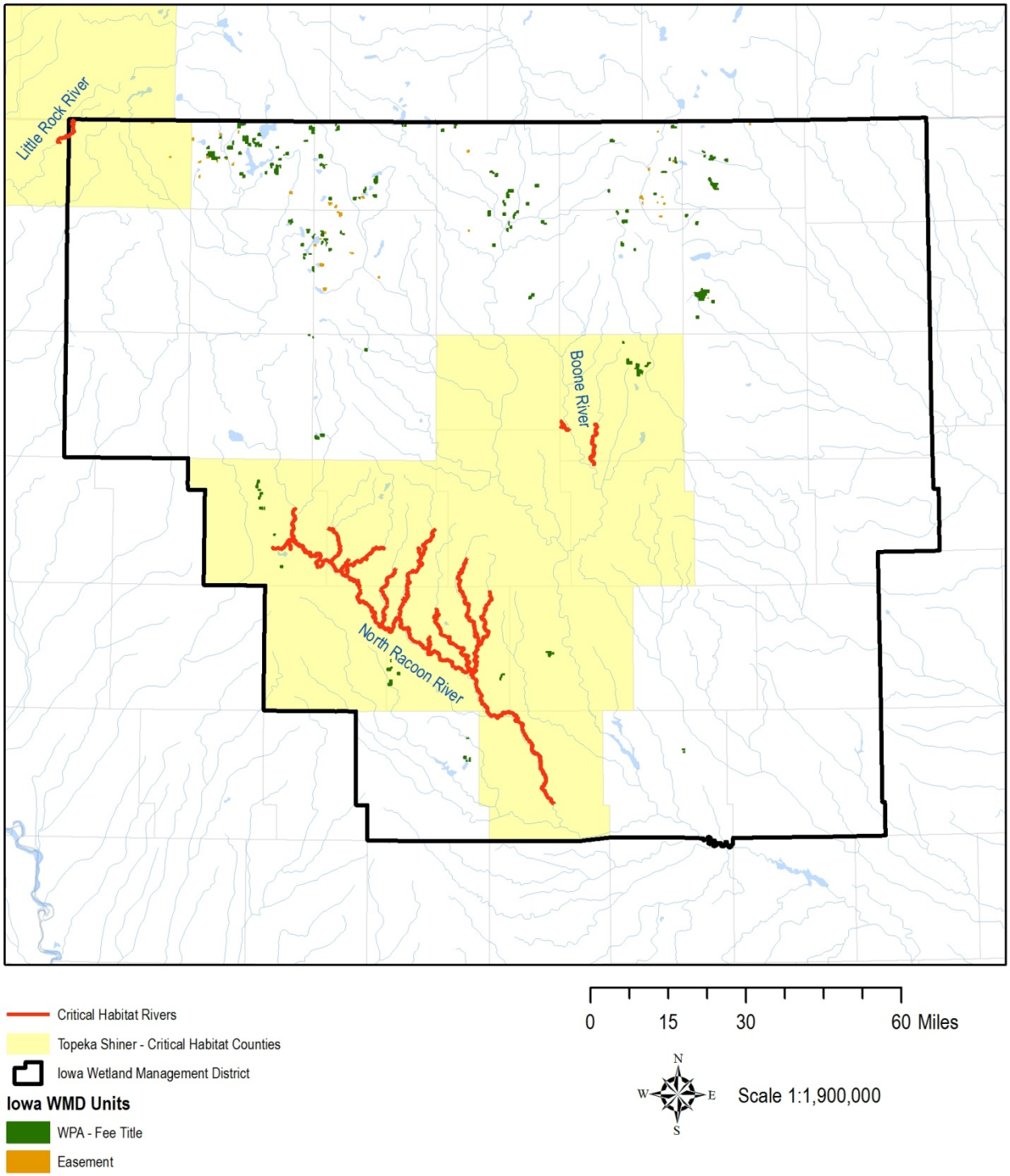
Western Prairie Fringed Orchid – Threatened (*Platanthera praeclara*)

Western prairie fringed orchid occurs in moist, calcareous subsaline prairies and prairie sedge meadows and swales. The species may be stable, but loss of tallgrass prairie habitat has markedly reduced its original range. Present sites are threatened by human activities, land use changes, competition by invasive plants, indiscriminate grazing, annual mid-summer haying, and poorly timed prescribed fire.

Current Management

Currently, there are no known populations of western prairie fringed orchid in the district. The recovery plan calls for protectively managing sites harboring 257 more additional plants. Although prescribed fire is the main management tool used in the district grazing, haying, and invasive plant removal may also be used. Depending on timing and duration, all of these management tools can have either positive or negative impacts on western prairie fringed orchid. If a new acquisition contains orchids or a new population is discovered on existing property, the use of all of these tools will be carefully planned and implemented to avoid negative impacts.

Figure 4-11: Topeka Shiner Critical Habitat in Iowa



Poweshiek Skipperling – Candidate Species (*Oarisma poweshiek*)

Poweshiek skipperlings are small, moth-like butterflies that are obligate residents of high, dry and low, wet tallgrass prairies. They are most often found in native prairie remnants in Iowa, Minnesota, North Dakota, South Dakota, and Wisconsin and in fens in Michigan. During preparation of a status assessment in 2005, there was evidence that populations were declining throughout its range, particularly in Iowa and Minnesota. Data since then confirms sharp population declines in most of its range. Of particular concern is its apparent disappearance from the majority of sites in the heart of it range in Iowa, Minnesota, and South Dakota. Population numbers in Iowa have likely dropped dramatically due to the huge losses of prairie across the landscape. In fact, the Service may propose critical habitat by the end of 2013 for the Poweshiek skipperling.

One important larval host plant is slender spike rush (*Eleocharis elliptica*), although there is good evidence from Minnesota and Wisconsin to indicate that prairie grasses, especially prairie dropseed (*Sporobolis heterolepis*) and little bluestem (*Schizachyrium scoparium*), are also important larval host plants (Shepherd, 2005). Adult Poweshiek skipperlings depend on nectar from a variety of flowers including blackeyed Susan (*Rudbeckia hirta*) and pale purple coneflower (*Echinacea pallida*). Threats to the Poweshiek skipperling include widespread conversion of native prairie for agriculture and other uses, woody and non-native plant invasion of prairie, over use of prescribed fire and overgrazing.

Current Management

The district is managed primarily to provide healthy, vigorous vegetation for the benefit of waterfowl and other migratory birds. Prescribed fire is the primary management tool used. Fire, if used too aggressively, however, can be a serious detriment to the Poweshiek skipperling. Fall and spring prescribed burns are likely to expose Poweshiek skipperling larvae and pupae to lethal temperatures. However, lack of fire can allow invasion of woody and non-native plants that threaten the long-term viability of the prairie. Losing the prairie plants will threaten the long-term viability of the Poweshiek skipperling and undermine the primary management goal of providing healthy, vigorous vegetation for use by migratory birds.

Currently, it is unknown if any Poweshiek skipperling populations occur in the district. There is a need to inventory all remnant prairie across the district to determine any presence. The Poweshiek skipperling does not currently have a recovery plan; however, protecting existing habitat, managing in a “butterfly friendly” manner, which includes mowing, burning, grazing, haying, and tree removal, and connecting fragments of native prairie are recommended. If the skipperling is found, management practices can be adjusted. Units could be subdivided and then burned on a rotational basis to leave some unburned refuge areas. Alternatively, haying could be used in place of fire, as long as cutting occurs after late July once skipperling eggs have hatched.

Dakota Skipper – Candidate Species (*Hesperia dacotae*)

The Dakota skipper is a small butterfly that is found on relatively flat and moist native bluestem prairie in which three species of wildflowers are usually present and in flower when in their adult (flight) stage: wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*), and smooth camas (*Zigadenus elegans*). The Dakota skipper also is found on dry upland prairie that is often on ridges and hillsides dominated by bluestem grasses and needlegrasses where three wildflowers are typically present: pale purple coneflower (*Echinacea pallida*), upright coneflower

(*Ratibida columnifera*), and blanketflower (*Gaillardia aristata*). Its only known location in Iowa was in the Little Sioux River valley; however, as of 2013, the Dakota skipper is believed to be extirpated from the state. Threats to the skipper include widespread conversion of native prairie for agriculture and other uses, over use of prescribed fire, and overgrazing.

Current Management

The district is managed primarily to provide healthy, vigorous vegetation for the benefit of waterfowl and other migratory birds. Prescribed fire is the primary management tool used. Dakota skippers are vulnerable to fire at virtually all life stages and likely depend on repopulation from unburned areas to persist. This strategy worked well when the prairie was a large, continuous, intact ecosystem. However it does not work well with the district's present situation of small, isolated remnant prairie tracts. Healthy prairie tracts are essential for the long-term survival of the Dakota skipper. However, most management tools used to maintain small, isolated tracts of prairie can be detrimental to the Dakota skipper. Fire, haying, and intensive grazing can all eliminate Dakota skippers from a site. The challenge then, is managing remnant prairie in a high quality condition with the appropriate tools and timing as to not eliminate the Dakota skipper from the site.

The Dakota skipper is presumed extirpated from Iowa, so it is unlikely that any Dakota skipper populations occur in the district. There is, however, a need to inventory all remnant prairie across the district to determine any presence. There is no recovery plan for the Dakota skipper at present, but protecting existing habitat, managing in a "butterfly friendly" manner, which includes mowing, burning, grazing, haying, and tree removal, and maintaining or creating tracts that are at least 1,000 acres in size are recommended. If the skipper is found, management practices can be adjusted. Units could be subdivided and then burned on a rotational basis to leave some unburned refuge areas. Alternatively, haying could be used in place of fire, as long as cutting is delayed until at least mid-August to reduce adverse effects to any life stage.

Migratory Birds

Approximately 270 species of birds are known or likely to occur within the district (appendix B). Seventy-eight of those species are listed as SGCN in the Iowa state wildlife action plan. Thirteen of those SGCN are state listed as threatened, endangered, or of special concern. The Least Tern (*Sterna antillarum*) is the only federally listed (endangered) bird species in the district.

Waterfowl

The largest group of birds to utilize the district is waterfowl since the PPR is considered the largest breeding ground for waterfowl in the continental United States. National wildlife refuges account for less than two percent of the landscape, yet they are responsible for producing nearly 23 percent of the region's waterfowl. Surveys have shown that although the PPR represents only 10 percent of the breeding habitat, it averages 50 to 75 percent of the duck recruitment each year in North America (North American Bird Conservation Initiative, U.S. Committee, 2011). Waterfowl species that use the prairie wetlands of Iowa include: Mallard (*Anas platyrhynchos*), Blue-winged Teal (*Anas discors*), Northern Shoveler (*Anas clypeata*), Northern Pintail (*Anas acuta*), American Wigeon (*Anas americana*), Gadwall (*Anas strepera*), Wood Duck (*Aix sponsa*), Ruddy Duck (*Oxyura jamaicensis*), Redhead (*Aythya americana*),

Lesser Scaup (*Aythya affinis*), Canvasback (*Aythya valisineria*), Ring-necked Duck (*Aythya collaris*), and Canada Goose (*Branta canadensis*).

The Service's Habitat and Population Evaluation Team office receives survey data from the Iowa DNR for waterfowl populations within the nine most north and central counties of the district. In 2012, the survey resulted in 19.5 breeding pairs of all 13 species combined (Mallard, Gadwall, Blue-winged Teal, Northern Shoveler, Northern Pintail, American Wigeon, Green-winged Teal [*A. carolinensis*], Wood Duck, Redhead, Canvasback, Lesser Scaup, Ring-necked Duck, and Ruddy Duck). This was up from 16.0 in 2011, but down from 23.1 in 2010. The average duck pair density (pairs per square mile) in 2012 was 4.3, up from 3.6 in 2011 but down from 5.1 in 2010 (FWS, 2012a).

Rich soils and prairie wetlands make the region ideal for waterfowl but also highly productive for agriculture. The corn and soybean belt overlaps extensively with the southern PPR. Massive conversion of wetlands and prairie to agricultural fields has dramatically altered the landscape, the hydrology, and the region's carrying capacity for waterfowl. Some waterfowl species are more susceptible than others are to the transformation of prairie into agriculture. Mallards, Blue-winged Teal, and Canada geese have been successful in agricultural landscapes while species such as Northern Pintail, Gadwall, Canvasback, Redhead, and Lesser Scaup have not.

Current Management

Mallard Brood

The district is managed to produce a mosaic of wetland and upland habitats that are attractive to waterfowl and other migratory birds. Wetlands are restored and managed to provide diverse wetland complexes that support the various life requirements of migrating and nesting waterfowl. Once the wetland basins have been restored, manipulation of vegetation becomes the primary management action. Prescribed fire, mowing during dry periods, and water level manipulation are the tools used to manage wetland vegetation. Most prescribed fire in the district occurs in the spring, although some fall burning has been used in recent years with good success. In the late summer or fall, mowing and/or prescribed fire have been used to remove dense wetland vegetation from some shallow wetlands. This effectively opens up the wetland and makes it more attractive to waterfowl the following spring. Fish barriers have been installed on some wetlands in the district to reduce water quality problems caused by rough fish populations. Water quality improvements lead to improved plant and invertebrate resources that directly benefit waterfowl.

Most upland in the district is converted from row crop fields to permanent grass cover. In addition to reducing erosion by slowing water's movement across the land, grass cover also provides important nesting cover for waterfowl.

Shorebirds

The PPR occurs within one of the major migration routes for shorebirds in North America. The U.S. PPR provides breeding habitat for 13 of 20 species of shorebirds that breed in the contiguous United States and offers important stopover habitat for 30 species of arctic breeders. The long distance migrations made by shorebirds are energetically expensive and require stopover sites to rest and refuel. During migration, shorebirds find protein rich food available in abundance in small, shallow wetlands scattered across the PPR. Some of the shorebird species that use the PPR of Iowa include: Killdeer (*Charadrius vociferous*), Upland Sandpiper (*Bartramia longicauda*), Greater Yellowlegs (*Tringa melanoleuca*), Lesser Yellowlegs (*Tringa flavipes*), Stilt Sandpiper (*Calidris himantopus*), Hudsonian Godwit (*Limosa haemastica*), American Golden-Plover (*Pluvialis dominica*), Pectoral Sandpiper (*Calidris melanotos*), Spotted Sandpiper (*Actitis macularia*), Wilson's Phalarope (*Phalaropus tricolor*), Long-billed Dowitcher (*Limnodromus scolopaceus*), and Dunlin (*Calidris alpina*).

Shorebirds Feeding in Shallow Water

Shorebirds are a morphologically diverse group that use a wide range of habitat types within the PPR, including dry grasslands, riverine beaches and sandbars, natural wetlands, lake margins, and flooded agricultural fields. During migration, shorebirds are generally associated with shallow water and moist mudflats. More than 70 percent of the species require water depths of less than 10 centimeters, and many are less than five centimeters (Skagen and Thompson, 2000). Many species prefer vegetation height to be less than half their body height, and most species prefer foraging sites with less than 25 percent vegetative cover (Skagen and Thompson, 2000). Due to the dynamic nature of prairie pothole wetlands, shorebird use of these potholes varies dramatically through time and space and is closely related to current wetland conditions.

The PPR has been dramatically altered since settlement. Agricultural fields have replaced the once vast grassland/wetland complexes that supported huge flocks of shorebirds. This is especially true in Iowa. As the landscape was transformed to agriculture, wetlands, especially seasonal and ephemeral wetlands, and grasslands have been reduced to the point where the Iowa PPR struggles to consistently provide for the needs of shorebirds.

Current Management

The district is managed primarily to produce a mosaic of wetland and upland habitats that are attractive to waterfowl and other migratory birds. Shorebirds are directly impacted by these management actions. Most of the district properties are managed as part of a bigger complex of habitat with various ownerships. Managing the district within a bigger complex of wildlife habitat increases the potential to provide a variety of wetland types in one area. This allows a greater diversity of shorebird species to find suitable habitat to meet their current life requirements.

Wetland drawdowns, prescribed fire, haying, and grazing are all management tools used to manipulate water levels and/or vegetation. Wetland drawdowns produce shallow water and exposed mudflats that are critical to many species of shorebirds. Prescribed fire, haying, and grazing are all used to manipulate vegetation with the goal of altering the current habitat in a way that will be beneficial to one or more groups of migratory birds.

Waterbirds

Waterbirds are a diverse group of birds that are closely tied to water bodies for a large portion of their life history. The group includes loons, grebes, pelicans, cormorants, herons, night-herons, bitterns, egrets, ibises, rails, coots, moorhens, cranes, gulls, and terns. This diverse group uses nearly every type of wetland habitat available, from large deep lakes to ephemeral, shallow marshes (Beyersbergen et al., 2004). Some of the more common waterbirds found throughout the district include; Great Blue Heron (*Ardea hoerodias*), Least Bittern (*Ixobrychus exilis*), Pied-billed Grebe (*Podilymbus podiceps*), Virginia Rail (*Rallus limicola*), Sora (*Porzana Carolina*), American Coot (*Fulica americana*), Double-crested Cormorant (*Phalacrocorax auritus*), and American White Pelican (*Pelecanus erythrorhynchos*).

As previously mentioned, Iowa has lost 99 percent of its pre-settlement wetlands (Noss et al., 1995). Wetland loss of this magnitude has greatly hampered the ability to provide sufficient wetland habitat for waterbirds in the district. The remaining wetlands are frequently influenced by adjacent agricultural practices. Water clarity, vegetation characteristics, and prey base can all be impacted in wetlands located in an agricultural landscape. Waterbirds benefit from preservation and restoration of wetlands and uplands. Grassland preservation and restoration in uplands directly maintains or improves water quality in the wetlands and provides sites for foraging and nesting.

Current Management

The district is managed primarily to produce a mosaic of wetland and upland habitats that are attractive to waterfowl and other migratory birds. Most of the district properties are managed as part of a bigger complex of habitat with various ownerships. Managing the district within a bigger complex of wildlife habitat increases the potential to provide a variety of wetland types in one area. Larger blocks of habitat also help mitigate the influences from adjacent agricultural lands.

Generally, management actions in the district are intended to improve the habitat for migratory birds. The waterbirds mentioned above are considered migratory birds and are directly impacted by these management actions. Restoring wetlands and grasslands provides vital habitat. After restoration, the goal of management is to maintain high quality habitat conditions that can help sustain healthy populations of migratory birds. Management tools used to accomplish this include water level management, prescribed fire, haying, mowing, and grazing.

Grassland Birds

Although agriculture has been an important feature in this area for over 100 years, it has been particularly intensive during the last several decades. Conversion from small, diverse, family farms to large agricultural operations specializing in monocultures of small grain and row crops has greatly reduced habitat on private lands such as pasture, hayed areas, and wetlands. Grassland birds are forced to nest in ever-dwindling fragments of remaining cover. Often the only nesting sites available are small isolated areas such as roadside ditches, abandoned

farmsteads, rock piles, or other isolated patches of habitat. In North America, grassland birds have exhibited steeper declines than any other avian group. Their decline has a number of causes including loss of breeding and wintering habitat from agriculture, urbanization, habitat degradation from fire suppression, inappropriate grazing regimes, woody plantings, pesticides, nest predation, and Brown-headed Cowbird (*Molothrus ater*) parasitism.

Within the category of "grassland birds," individual species show a variety of habitat preferences based on vegetation height, cover density, grass/forb ratio, soil moisture, litter depth, degree of woody vegetation, and plant species composition. A mosaic of grassland habitats is needed to meet the varying needs of grassland birds. Some of the species of concern found in the district are area-sensitive, which means they require large, contiguous blocks of habitat to reproduce successfully. Area-sensitive species include the Short-eared Owl (*Asio flammeus*), Northern Harrier (*Circus cyaneus*), Upland Sandpiper (*Bartramia longicauda*), Bobolink (*Dolichonyx oryzivorus*), Henslow's Sparrow (*Ammodramus henslowii*), and Savannah Sparrow (*Passerculus sandwichensis*).

Current Management

The district is managed primarily to produce a mosaic of wetland and upland habitats that are attractive to waterfowl and other migratory birds. Most of the district properties are managed as part of a bigger complex of habitat with various ownerships. Managing the district within a bigger complex of wildlife habitat increases the potential to provide a variety of wetland and grassland types in one area. Larger blocks of habitat also help mitigate the influences from adjacent agricultural lands.

District grasslands are managed to produce vigorous stands that will be attractive nesting sites for waterfowl and other migratory birds. Generally, new seedings are diverse mixes of native grasses and forbs that provide enough structural diversity to be attractive to a wide variety of birds. Since natural processes such as wildfire and grazing by free roaming ungulates have been virtually eliminated from the landscape, grasslands require management to keep them healthy and free from woody and other invasive plants. Prescribed fire is the primary management tool used on district grasslands. Haying, grazing, and invasive plant control/removal are also used to maintain healthy grasslands throughout the district.

Invasive Species

Noxious weeds are a continuing problem both ecologically and socially/politically. Invasive species present a daunting challenge to land managers. Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), crown vetch (*Coronilla varia*), sweet clover (*Melilotus sp.*), leafy spurge (*Euphorbia esula*), sericea lespedeza (*Lespedeza cuneata*), and spotted knapweed (*Centaurea biebersteinii*) can displace native vegetation over large areas and are a serious concern to neighboring farmers and county officials. Purple loosestrife (*Lythrum salicaria*) can effectively displace cattails and other native wetland vegetation and turn productive marshes into a sea of purple flowers. Carp can destroy native submergent vegetation, which provides the base for invertebrates. Minnows, often from past stockings by bait dealers, can cause serious damage to wetland food chains by reducing invertebrate populations needed by breeding waterfowl and ducklings.

Control of these problem species is often costly, both in terms of chemicals, equipment, and staff time. Managers strive to use a balanced approach in controlling these species. Direct

control, such as chemical application or mowing, is often needed on serious problem areas. Once healthy native plant communities are reestablished, they can often compete successfully against non-native and invasive species. Water level control, including complete drawdowns, can eliminate carp and minnow populations on wetlands where this capability is present.

Current Management

Many district resources in the form of time and money are spent attempting to control invasive species. Mowing, applying chemicals, and properly timed prescribed burning are all methods used to control invasive species. In cases where diverse prairie mixes are planted, frequently the best management tool is patience. As the seeding develops and matures during the first five to ten years, it will often crowd out mild infestations of Canada thistle with only a few well timed prescribed fires. Heavy infestations of Canada thistle and more persistent weeds like crown vetch, leafy spurge and sericea lespedeza often require more active management like mowing or chemical treatment. At times, chemical treatment is the only practical way to get control of some invasive species. Although carefully directed chemical use can be effective in controlling invasive plants, care needs to be taken to avoid killing the desirable plants that provide the long-term competition for the invasive plants. Killing non-target plants may create openings in the seeding that are susceptible to reinvasion by more invasive plants. Invasive species management is a balancing act of minimizing collateral damage while achieving effective control.

Effects for all Wildlife

Direct, Indirect, and Cumulative

Indicators used for evaluating effects on wildlife include the following:

- Abundance: The relative representation, or number of individuals, of any given species in a geographic area
- Distribution: The spatial arrangement of wildlife, and describes the dispersion or local densities of individuals within a geographical area over time
- Health and vitality: The overall well-being of wildlife populations related to disturbance, stress, disease, environmental toxicity, mortality, reproductive success, and a multitude of behavioral factors

The intensity categories for determining effects on wildlife are defined as the following:

- Negligible: May be a change in wildlife, but the change would not be measurable or would be at the lowest level of detection
- Minor: May be a detectable change, but the change would be slight and have a local effect on a population; could include changes in the abundance or distribution of individuals in a local area but not changes that would affect the viability of local populations
- Moderate: Clearly detectable change in a population and could have an appreciable effect; could include changes in the abundance or distribution of local populations but not changes that would affect the viability of regional populations

- Major: Severely adverse or exceptionally beneficial to a population, substantial, and highly noticeable; could result in widespread change and be permanent, could include changes in the abundance or distribution of a local or regional population to the extent that the population would not be likely to recover (adverse) or would return to a sustainable level (beneficial)

The effects on wildlife from implementing the various alternatives described above are included below under their respective sections. The effects of the consumptive uses hunting, fishing, and trapping, applying to any game species and allowed under all alternatives were determined to be the following:

All alternatives generally allow hunting, fishing, and trapping on most of the district. Hunting, fishing, and trapping cause mortality and wounding of individuals (adverse effect) but are all regulated so they don't threaten the perpetuation of populations and in some instances are actually utilized to keep populations at a healthy level (beneficial effect). The effects of hunting, fishing, and trapping on wildlife and fish populations are monitored within the state and across the Nation and are considered in setting annual bag limits. Therefore these uses are likely to have a neutral overall effect on wildlife and fish.

Implementing a nontoxic shot shell regulation under any of the alternatives would have a beneficial effect on wildlife health and vitality. Requiring the possession and use of only approved nontoxic shot shells will reduce the amount of lead added to the district environment thereby reducing the chances of lead ingestion by wildlife. Lead is a toxic metal that, in sufficient quantities, has adverse effects on the nervous and reproductive systems of animals and can be lethal to wildlife if ingested, even in small amounts.

Resident Wildlife

The effects on resident wildlife from implementing the various alternatives were determined to be the following:

Beneficial, Long-Term, Minor, Landscape

Even though all the alternatives were developed with a different focus than resident wildlife, their needs are still provided for secondarily. Converting cropland, which may include some food plots, to perennial grassland will provide habitat for many species of resident wildlife. Acquiring and restoring wetlands, regardless of type, will also provide habitat for a wide variety of resident wildlife. Alternatives A, C, and D retain some food plots in the district, which will provide a supplemental food source for some resident wildlife as well. All of these actions will contribute to maintaining or increasing resident wildlife abundance, distribution, health, and vitality.

Other conservation agencies are also restoring cropland to perennial grassland or wetland on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on wildlife as described above.

Threatened and Endangered Species

Effects to threatened and endangered species vary by species. Acquiring and restoring more natural and perhaps native vegetation on the landscape, both in uplands and wetlands, will

provide better habitat for most any species than currently exists. In general, there will be no adverse effects to any federally threatened or endangered species from implementing any of the alternatives. However, a particular action completed for the benefit of the greater population could have a negative effect on one or a few individuals. For example, prescribed fire can have a negative impact on skippers and butterflies; however, it is essential for maintaining the tallgrass prairie that they need to survive. If certain stipulations are followed regarding when, where, and how much of an area is burned, the adverse effect is usually reduced or eliminated. One objective for this plan is to increase native grassland with a plant diversity of 100 or more species and provide more suitable habitat (in terms of vegetative structure as will be defined in the district's Habitat Management Plan) in existing grassland for a wide variety of grassland-dependent birds and other species. One strategy related to that objective is annual treatment of a minimum of 25 percent of district grasslands with a combination of the following types of treatment: haying, prescribed grazing, prescribed fire, mowing, or tree removal. This strategy will be employed in such a way as to have all district grassland acres receiving a treatment at least once every four years. This management direction will leave some grassland untreated, while still improving/treating smaller portions of habitat. Given the more programmatic nature of the objectives in this document and the unknown presence of any given species in future acquisitions, effects that are adverse or beneficial to any particular threatened or endangered species are difficult to determine at this time.

Other conservation agencies are also restoring more natural and perhaps native vegetation to the landscape, both in uplands and wetlands, on public land, and to a lesser extent private land. Cumulatively these actions would have a greater effect on threatened and endangered species as described above.

Migratory Birds

Waterfowl

The effects on waterfowl from implementing the various alternatives were determined to be the following:

Breeding Waterfowl

Beneficial, Long-Term, Minor, Landscape

Even though Alternative C was developed around a focus on migrating waterfowl, the needs of breeding waterfowl are still provided for secondarily. Continuing acquisition, albeit focused on semi-permanent to shallow lakes, provides necessary habitat for late-season brood rearing and molting for post-breeding waterfowl, which contributes to their abundance, health, and vitality, and possibly their distribution. Converting cropland, which may include some food plots, to diverse native grassland with some rotational cover provides suitable nesting cover for breeding waterfowl, thus, increasing their abundance and distribution as well. Limiting food plots to three percent or less of the district uplands should ensure an important food source for migrating waterfowl but should not detract from breeding waterfowl production.

Beneficial, Long-Term, Moderate, Landscape

Since Alternatives A, B, and D were developed around a focus on breeding waterfowl, they will have the most beneficial effect. Increasing the population of Mallard and Blue-winged Teal, in particular, will increase their abundance and probably their distribution as well. Continuing to

acquire land with restorable wetland and upland breeding waterfowl habitat in the most productive areas (determined by new landscape-level tolls and models) will also increase their abundance and most certainly their distribution as well. Converting cropland, which may include some food plots, to perennial grassland will increase the amount of suitable nesting cover for breeding waterfowl, thus, increasing their abundance and distribution as well. Restoring a wide variety of wetland types will provide the complete life cycle needs of breeding waterfowl from pair bonding to brood rearing. All of these acquisition and restoration activities will ultimately provide good quality habitat across the landscape, which help to increase the health and vitality of breeding waterfowl.

Other conservation agencies are also acquiring and restoring cropland to perennial grassland or wetland on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on breeding waterfowl as described above. However, there are private lands within the district and the PPR of Iowa that are still being drained and put into row crop agriculture. Some private conservation land in CRP that is being returned to row crop agriculture, for example, either has expiring contracts or has contracts that are deliberately terminated early by producers.

Migrating Waterfowl

Beneficial, Long-Term, Minor, Landscape

Even though Alternatives A, B, and D were developed around a focus on breeding waterfowl, the needs of migrating waterfowl are still provided for secondarily. The acquisition and restoration activities mentioned above for breeding waterfowl also affect the abundance, distribution, health, and vitality of migrating waterfowl—just to a lesser degree. Acquiring land with restorable habitat provides more stopover sites for migrants such as Lesser Scaup. In particular, restoring semi-permanent to shallow lake habitats as one of the many focal wetland types provides an important food source for waterfowl during migration. Alternatives A and D allow food plots in the district, which also provide supplemental food for migrating waterfowl. Providing good quality stopover sites and numerous food sources ultimately helps to increase the health and vitality of migrating waterfowl so they arrive at their breeding/wintering grounds in better overall condition.

Beneficial, Long-Term, Moderate, Landscape

Since Alternative C was developed around a focus on migrating waterfowl, it will have the most beneficial effect. Maintaining the 40 percent Lesser Scaup population detected in the Mississippi flyway mid-winter waterfowl survey, in particular, will maintain their abundance and probably distribution as well. Focusing acquisition around semi-permanent to shallow lakes provides the best stopover habitat and food source for migrating waterfowl. Allowing up to three percent of the district uplands to be planted to food plots provides an important supplemental food source for birds during migration. Providing good quality stopover sites and numerous food sources ultimately helps to increase the health and vitality of migrating waterfowl so they arrive at their breeding/wintering grounds in better overall condition.

Other conservation agencies are also acquiring and restoring cropland to perennial grassland or wetland on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on migrating waterfowl as described above. However, there are private lands within the district and the PPR of Iowa that are still being drained and put into row crop agriculture. Some private conservation land in CRP that is being

returned to row crop agriculture, for example, either has expiring contracts or has contracts that are deliberately terminated early by producers.

Shorebirds

The effects on shorebirds from implementing the various alternatives were determined to be the following:

Beneficial, Long-Term, Minor, Landscape

Even though all the alternatives were developed with a different focus than shorebirds, their needs are still provided for secondarily. Acquisition that includes restorable wetlands will provide habitat for shorebirds, which may benefit their abundance, distribution, health, and vitality. Shorelines and vegetation around the water will provide areas for mating, nesting, and feeding. This is especially true if a variety of wetland types are provided. Seasonal and other less permanent wetlands can provide excellent foraging opportunities for shorebirds in shallow water and exposed mudflats. Restoration of the uplands to perennial or native grasslands lessen nutrient and soil runoff, thereby contributing to better water quality. Good water quality in the wetlands is essential for maintaining the necessary food that shorebirds need.

Other conservation agencies are also acquiring and restoring cropland to perennial grassland or wetland on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on shorebirds as described above. However, there are private lands within the district and the PPR of Iowa that are still being drained and put into row crop agriculture. Some private conservation land in CRP that is being returned to row crop agriculture, for example, either has expiring contracts or has contracts that are deliberately terminated early by producers.

Waterbirds

The effects on waterbirds from implementing the various alternatives were determined to be the following:

Beneficial, Long-Term, Minor, Landscape

Even though all the alternatives were developed with a different focus than waterbirds, their needs are still provided for secondarily. Acquisition that includes restorable wetlands will provide habitat for waterbirds, which may benefit their abundance, distribution, health, and vitality. Open water and vegetative structures in and around the wetlands will provide areas for mating, nesting, and feeding. This is especially true if a variety of wetland types are provided. Restoration of the uplands to perennial or native grasslands lessen nutrient and soil runoff, thereby contributing to better water quality. Good water quality in the wetlands is essential for maintaining the necessary food that waterbirds need.

Other conservation agencies are also acquiring and restoring cropland to perennial grassland or wetland on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on waterbirds as described above. However, there are private lands within the district and the PPR of Iowa that are still being drained and put into row crop agriculture. Some private conservation land in CRP that is being returned to row crop agriculture, for example, either has expiring contracts or has contracts that are deliberately terminated early by producers.

Grassland Birds

The effects on grassland birds from implementing the various alternatives were determined to be the following:

Beneficial, Long-Term, Moderate, Landscape

For all alternatives, converting cropland, which may include some food plots, to perennial grassland will provide more suitable habitat for grassland birds, which will increase their abundance, distribution, health, and vitality. Acquisition and restoration of new upland and wetland habitat will increase the distribution of grassland birds.

Other conservation agencies are also acquiring and restoring cropland to perennial grassland on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on breeding grassland birds as described above. However, there are private lands within the district and the PPR of Iowa that are still being drained (wet grasslands) and put into row crop agriculture. Some private conservation land in CRP that is being returned to row crop agriculture, for example, either has expiring contracts or has contracts that are deliberately terminated early by producers.

Invasive Species

For all alternatives, effects to invasive species vary by species. In general, all effects to invasive species would be adverse as they are an undesirable part of the district. Actions will be taken to reduce or eliminate them. Restoring more natural and perhaps native vegetation to the landscape, both in uplands and wetlands, should eliminate available space for invasive species and lessen their ability to dominate an area. Some species, such as reed canarygrass, are particularly competitive, and it seems unlikely that they will ever be eliminated from the district. However, management actions will continue to at least keep those species in check. Given the programmatic nature of the objectives in this document and the unknown presence of any given species in future acquisitions, effects to any particular invasive species are difficult to determine at this time.

Other conservation agencies are also treating and removing invasive species on public land and to a lesser extent private land. Cumulatively these actions would have a greater, beneficial, long-term effect on invasive species as described above.

People

According to the 2010 U.S. Census (U.S. Census Bureau, 2010), the population of all 35 counties in the district is estimated to be 1.1 million while the population base of the largest cities combined is nearly 800,000. Few counties had population growth in the last two decades, and few are projected to have growth in the next five years. Pocahontas County has the biggest declines for the past and future while Dallas County has the biggest increases for the past and future. Changes in population from 1990–2000 varied across the district ranging from a decrease of 1 percent to an increase of 3.2 percent with an average 0.04 percent increase for the decade. The change in population from 2000–2010 ranged from a decrease of 1.18 percent to an increase of 4.34 percent with an average 0.2 percent decrease for the

decade. The predicted change in population from 2010–2015 ranges from a 1.13 percent decrease to a 3.51 percent increase with an average 0.25 percent decrease for the five years.

Socioeconomic Setting

Current Situation

Demographics

The average household size across the district ranges from two to three people with a median age of 40–46 years old. Buena Vista, Webster, Dallas, and Polk Counties have median ages of 36–39 while Story County has a median age of 28, likely due to it being home to Iowa State University. The majority of the district has a median household income between 41,000 and 70,000 dollars per year with Palo Alto, Pocahontas, and Sac Counties at 40,000 dollars per year. However, the unemployment rate across most of the district in 2010 was between four and eight percent, with six counties between eight and 15 percent (U.S. Census Bureau, 2010).

In general most employment across the district is in manufacturing, educational, health or social services, and retail trade. Agriculture employment is higher in some counties while finance, real estate, and insurance are higher in others. Thirty-two to 40 percent of the population has a high school diploma while 11–20 percent of the population has a bachelor's degree (U.S. Census Bureau, 2010).

Agriculture, Commodity Prices and Land Valuation

According to Iowa State University's *2011 Farmland Value Survey*, 2011 was "one of the most remarkable years in Iowa land value history" (Duffy, 2011). The percentage increase reported for 2011 (32.5 percent) was the highest ever recorded by the survey. The previous high was 31.7 percent increase recorded in 1973. In addition, the 2011 survey value ($6,708/acre), when adjusted for inflation, was at an all-time high. The previous inflation adjusted high was in 1979. The average land value per acre in 2011 for the four reporting districts that encompass the Iowa WMD: north central, northwest, west central, and central Iowa was $7,356, $8,338, $7,419, and $7781 respectively. These were the four highest values across the entire state.

High commodity prices were the most frequently mentioned positive factor influencing the agricultural real estate market, mentioned by 86 percent of survey respondents. According to Duffy,

> "Farmland values are highly correlated with gross farm income. As gross farm income increases so will land values. In 2005, corn prices averaged $1.94 per bushel in Iowa. The preliminary estimated price for November 2011 is $6.05. Soybean prices changed from $5.54 to $11.40 over the same time period."

Even though there has been "considerable variation" in commodity prices over the past few years, net farm income has increased substantially and is expected to continue. This increased income has been the primary cause for the increased farmland values along with historic low interest rates for loans to purchase farmland and a dismally performing stock market, where investing in land appears safer and wiser than investing in traditional stocks (Duffy, 2011). These trends pose a challenge to management of existing and continued acquisition of new public land in Iowa. Available funds will not buy as much land, desirable land may not be for

sale, and even marginal land will likely be farmed. Increased agriculture in the PPR of Iowa may lead to increased drainage and decreased habitat for many grassland and wetland-dependent species.

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. Its purpose was to focus the attention of federal agencies 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.

None of the management alternatives for the Iowa WMD described in this Environmental Assessment would disproportionately place any adverse environmental, economic, social, or health affects onto minority and low-income populations. The percentage of minorities in north-central and northwest Iowa counties is lower than the State of Iowa (and much lower than the United States) as a whole. Average incomes and poverty rates within the counties are comparable to other counties in the state with the more populated counties ranking higher in poverty rates (U.S. Census Bureau, 2011). Public use activities proposed for each alternative would be available to any visitor regardless of race, ethnicity, or income level.

Land Use Patterns

Croplands

The majority of the land in the district is farmed. Corn and soybeans are major crops grown in the area. Iowa had a record corn crop in 2010 and once again led the Nation in soybean production. Over the past fifty years, the state has seen a steady reduction in the overall land in farms and net income from farming, while farm size and crop yields have grown (USDA, 2011). With farm size expanding and commodity prices rising, agriculture threatens remaining wetlands and prairie now more than ever.

Grasslands

In Iowa, less than one-tenth of one percent of the remaining prairie is permanently protected. Much of this land is in public ownership. Recreational access is different for different sites, and there are varying degrees of protection and management on native prairie tracts. Natural prairie diversity is dependent upon intermittent grazing and burning. Prescribed burns are often used by government and private conservation organizations, but some protected tracts, such as those in easements, may not receive as much attention.

Hay fields, pastures, and fields in CRP are also grasslands. More quantifiable and less diverse, these areas may be restorable to some extent, but these areas cannot be restored to virgin prairie. Monoculture stands of alfalfa are obviously less diverse than the prairie they have displaced. Fenced pastures grazed by cattle are quite different from the prairie once grazed by

wandering bison. Cattle are often permitted to overgraze, weakening native grasses, eliminating native flowers, and encouraging colonization by non-native weedy forbs and trees.

Wetlands

In Iowa, nearly 99 percent of all natural wetlands have disappeared from the landscape. Most have been tiled, drained, and converted to agriculture. Across the district, some wetlands have been preserved or restored and are primarily in public ownership while others have been enrolled in the Wetlands Reserves Program, remaining in private ownership but protected by permanent easement. Recreational access to these sites varies.

Urban Development

The largest urban center within the district is Des Moines, Iowa, with over one-half of a million people residing in the five-county metropolitan area. Other cities include Fort Dodge, Spencer, Mason City, Boone, Ames, Ankeny, and Marshalltown. All of these areas require manufacturing, retail services, government, education services, transportation, utilities, and other commercial services. Urban spread into rural areas is resulting in the conversion of additional agricultural lands and prairie and grassland areas. According to the 2010 U.S. Census, the major area of anticipated growth within the district is around the Des Moines metropolitan area. The Waterloo-Cedar Falls metropolitan area just outside of the district is expected to grow as well, which would affect the eastern edge of the district.

Aggregate Resources

Nearly every county within the district contains underlying materials that could be utilized for crushed stone or construction sand and gravel. Concentrated operations of these minerals exist in Cerro Gordo and Polk Counties, while Webster County contains a gypsum deposit with an active gypsum plant. Numerous rock quarries exist throughout the district providing materials for building and maintaining roads, construction, and concrete. In 2008, the production of such operations across the entire state was valued at $680 million. This was nearly a two percent decrease from 2007 and an additional nearly two percent decrease from 2006 (U.S. Geological Survey, 2008).

Rural Development

Rural development also threatens district lands in counties with growing populations. Lands adjoining WPAs are often seen as highly desirable rural building lots that are purchased as small hobby farms or rural homesites. This can result in the WPA being "ringed" by homes, with a series of negative impacts on the WPA. This development can limit the use of prescribed fire for future management and can lead to the following:

- Increased trespass on district lands by neighbors using ATVs, horses, or vehicles
- Increased threats to wildlife from stray pets such as cats and dogs
- Increased use of district land by neighbors for illegal uses such as dumping, gardening, equipment storage, etc.
- Hunter and neighbor discrepancies about safety during the hunting seasons;
- Increased noise

- Increased storm water runoff

Alternative Energy Developments

Waterfowl and Wind Turbines

Iowa is the leading state in wind power generation of electricity. The north and west portion of the state has, on average, stronger winds, making that area best suited for wind turbines. Numerous wind farms exist within or near the district, and other new ones are planned. While finding alternatives to fossil fuel consumption is important, turbines are potential threats to wildlife. Collision mortality, negative visual stimulus (similar to trees) and construction and access disturbance are all problematic. The Service, working with the Wind Turbine Guidelines Advisory Committee, developed voluntary land-based wind energy guidelines in 2012 to provide a structured, scientific process for addressing wildlife conservation concerns at all stages of land-based wind energy development. They also promote effective communication among wind energy developers and federal, state, and local conservation agencies and tribes. When used in concert with appropriate regulatory tools, the guidelines form the best practical approach for conserving species of concern (FWS, 2012b).

Effects

Direct, Indirect, and Cumulative

Indicators used for evaluating effects on socioeconomics include the following:

- Social: The change in the state or condition of an individual, group of individuals, community, or society. This may include physiological, psychological, cultural, spiritual, or other forms of social change. Examples include physical health, mental health, education, incidence of crime or conflict, place attachment, stewardship, community pride, family cohesion, cultural understanding, spiritual health, and appreciation of nature.
- Economic: The change in a financial value, state, or condition of something to an individual, group, business, community, government, or society. Examples include direct fiscal impacts (e.g., sales, jobs, and income), perceived values, worker productivity, business success, and organizational wellness.

The intensity categories for determining effects on socioeconomics are defined as the following:

- Negligible: Very few individuals, families, social groups, businesses, communities, or government entities are impacted. Impacts are barely detectable or detectable only

through indirect means and with no discernible impact on regional social and/or economic conditions

- Minor: A few individuals, families, social groups, businesses, communities, or government entities are impacted. Impacts are small but detectable, limited to a small geographic area, comparable in scale to typical year-to-year or seasonal variations, and not expected to substantively alter social and/or economic conditions over the long-term
- Moderate: Many individuals, families, social groups, businesses, communities, or government entities are impacted. Impacts are readily apparent and detectable across a wider geographic area and may have a noticeable effect on social and/or economic conditions over the long-term
- Major: A large number of individuals, families, social groups, businesses, communities, or government entities are impacted. Impacts are readily detectable and observed, extend across much of the study area, and have a substantial influence on social and/or economic conditions over the long-term

The effects on socioeconomics from implementing the various alternatives described above were determined to be the following:

Beneficial, Long-Term, Moderate, Local

For Alternatives C and D, with more public use and facilities provided, a broader group of users may go to the district and would likely spend more money at local businesses for their amenities. According to the *2011 National Survey of Fishing, Hunting, and Wildlife Associated Recreation*, hunters spent $121.5 million in Iowa on hunting trip-related expenses. In addition, residents and nonresidents spent over $64 million on wildlife-watching trip-related expenses in Iowa during 2011 (U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, and U.S. Census Bureau, 2011). Municipalities and community organizations could bring additional tourism revenues into their economies by establishing partnerships with the Service broadening the benefit of this effect.

It is also likely that with more land acquisition and more restoration of agricultural land to grassland and wetland habitat, there will be more visitors, particularly hunters. According to the Service's Refuge Annual Performance Planning (RAPP) report prepared by the district staff, there were 58,000 total hunting visits to the district in 2012. This is approximately 0.4 visits per acre. Therefore, if the district acquires an additional 3,000 to 4,500 acres over the next 15 years, an additional 1,400 to 1,600 visits could occur over that same period. These additional visits will add more money to the local economy in food, supplies, and gas.

Beneficial, Long-Term, Minor, Landscape

For all alternatives, one issue for the district is the prolonged decline of grassland-dependent bird populations due to the decline of grassland habitat. One of the strategies to address this issue is to annually treat a minimum of 25 percent of WPAs in the district with at least one of a variety of treatments. These treatments include haying and grazing to mimic natural processes that historically diversified grassland types across the landscape. Both of these uses provide an economic gain to local farmers. It is likely that one-eighth of the district may be under haying and/or grazing in any given year.

Adverse, Long-Term, Moderate, Landscape

For Alternatives B, C, and D, converting productive and profitable cropland to perennial grassland has a negative impact on the local cooperative farmers and their farm management company. Currently 52 cooperative farmers are under contract with the district. One farm management company oversees 28 of those contracts. The Iowa DNR oversees the other 24 contracts.

Currently, migratory bird funding provides two million dollars annually to the district for acquisition and the average land value across the district is $7,700/acre (Duffy, 2011). Assuming this trend is constant, the district would grow by approximately 260 acres per year—although land values will likely continue to increase and the two million dollars is not guaranteed every year. For Alternatives B and D, cropland is to be reduced to no more than two years' worth of acquisition (520 acres) at any given time; the rest is to be converted to perennial grassland.

Since the district currently has approximately 3,700 acres in cropland with 52 cooperative farmers, each cooperative farmer is responsible for 70 acres on average. If a maximum of 520 acres of cropland existed in the district (Alternatives B and D) at any given time to control weeds, invasive species, and woody encroachment until it can be converted to perennial grassland, then only approximately seven cooperative farmers would need to be under contract. Therefore, approximately 45 farmers will be negatively impacted by Alternatives B and D if implemented. Since the average farm size across the district in 2010 was 384 acres (USDA, 2011), these 45 cooperative farmers could each lose 18 percent of their current operation. Reducing (possibly in Alternative D) or eliminating (Alternative B) food plots would worsen this impact.

Visitor Services

The main office for the Iowa WMD is located at Union Slough NWR, located approximately two and one-half hours southwest of Minneapolis, MN and northwest of Des Moines. Driving from Algona, Iowa take Highway 169 north to Bancroft; turn right (east) on A-42, and proceed six miles to the office. From Interstate 90, take the Blue Earth, MN exit, and follow Rt. 169 south into Iowa. At Lakota, follow P60 south to A-42, then west 0.25 miles on A-42 to the office. Interpretive displays, wetland district public use regulations, and other information are available 7:30 a.m.–4:00 p.m., Monday–Friday (excluding federal holidays). The Iowa DNR has six wildlife field offices that serve as points of contact for district visitors as well.

The Union Slough NWR office provides a visitor contact station for the Iowa WMD. The office is staffed with an administrative technician that also serves as a visitor contact liaison. The refuge office maintains a wildlife display interpreting both the district and the refuge. Both indoor and outdoor kiosks orient visitors to the area. District public use information and regulations are current and available both indoors and outdoors at the office.

Current Management

Waterfowl Production Areas differ from NWRs in that they are open to hunting, fishing, and trapping in accordance with state law. Therefore, WPAs are "open until closed" by state or federal law for hunting, fishing, and trapping. National Wildlife Refuges on the other hand are "closed until opened" to these uses. However, WPAs can be opened to other uses if

determined to be appropriate and compatible with the mission of the National Wildlife Refuge System and the purposes of the district.

Hunting, in particular, has a long history with WPAs. When Congress amended the Duck Stamp Act in 1958, it authorized the acquisition of wetlands and uplands as WPAs and waived the usual "inviolate sanctuary" provisions. Thus, WPAs were intended to be open to waterfowl hunting, in part because waterfowl hunters, through the purchase of Duck Stamps and support for price increases of the stamp, played a major role in acquisition of these areas. Hunting, for both waterfowl and resident game species accounts for more than half of the visits to WPAs.

However, state regulations classify some WPAs as “waterfowl refuges.” According to Iowa Code 52.1(3):

> “Waterfowl refuges: The following areas under the jurisdiction of the department of natural resources are established as waterfowl refuges where posted. It shall be unlawful to hunt ducks and geese on the following areas, where posted, at any time during the year. It shall be unlawful to trespass in any manner on the following areas, where posted, during the dates posted, both dates inclusive . . . “

For Iowa WMD these regulations apply to at least some portion of the following WPAs: Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties). The Service’s Memorandum of Understanding (MOU) with the Iowa DNR states, “. . . other wildlife-dependent uses (wildlife observation, wildlife photography, environmental education, and interpretation) are generally allowed."

Since the district is overseen by staff from Union Slough NWR, environmental education and interpretation programs are nearly always hosted at the refuge rather than the district. A recently rekindled partnership with the Kossuth County Conservation Board (KCCB) has also led to KCCB naturalists conducting environmental education and interpretation programs at the refuge particularly on prairie/wetland habitats and their dependent wildlife. However, other education, interpretation and outreach happens through the partnership. The Iowa DNR provides these services at the county and WPA level via the staff at each wildlife unit (biologist and technicians) as well as through their private lands program.

Upland Interpretation for Children

Effects

Direct, Indirect, and Cumulative

Indicators used for evaluating effects on visitor services include the following:

- Public Access: The quantity of refuge/district land open and available to the public, seasonal variability in this access, and the universality of accessibility for refuge/district facilities and programs.
- Availability of Information: Visitors' ability to find the refuge/district, on-site orientation, information interpreting refuge/district resources and describing recreation opportunities, and the presence of refuge/district staff.
- Range of Activities: The types and availability of wildlife-dependent recreation opportunities and programming associated with a refuge/district, including but not limited to the 'Big Six' uses: hunting, fishing, wildlife observation, photography, environmental education, and interpretation.
- Level of Developed Infrastructure: The perceived quantity of facilities and quantity of the environment altered from its natural condition to accommodate refuge/district recreation and management.
- Safety: A refuge/district environment that protects visitors from danger, risk, or injury, or otherwise reduces recognized hazards.
- Visitation: The volumes and patterns of visitation on a station over a period of time as indicated by the number, timing, location, and duration of visits. These visitation factors have implications on station activities, services, infrastructure, law enforcement, and user interaction.

The intensity categories for determining effects on visitor services are defined as the following:

- Negligible: Effect not detectable by visitors or barely perceptible to most visitors; therefore, not discernible.
- Minor: May be a slightly detectable effect that would result in little detraction or improvement in the quality of the visitor experience.
- Moderate: Change in the experiences of a large number of visitors, resulting in a noticeable decrease or improvement in the quality of the experience.
- Major: Substantial improvement or a severe decrease in the quality of many visitors experience would result from a clearly detectable action that dramatically alters the availability of important aspects of the visitor experience such as the addition or elimination of a recreation opportunity or a permanent change in access to a popular area.

The effects on visitor services from implementing the various alternatives described above were determined to be the following:

Beneficial, Long-Term, Moderate, Landscape

For Alternatives C and D, providing more public uses and facilities (kiosks, trails, pull-offs, etc.) will increase the range of activities, availability of information, safety, and possibly the amount of visitation for the district.

The requirement to use and possess only approved nontoxic shot shells in the district, may have an adverse effect on some visitors. However, the effect would be negligible since this is already a requirement for waterfowl hunting in the district. Nontoxic shot is readily available in

stores, and the only real change involves wild turkey hunting. Furthermore, the Iowa DNR hunting regulations help hunters adapt to using non-toxic shot for wild turkey hunting by allowing hunters to use larger shot sizes (heavier loads).

Historic and Cultural Resources

Native American History and Early Settlement

Archeological evidence in northwestern Iowa indicates people have occupied this area for approximately the past 12,000 years. As the glaciers retreated to the north in the warming period known as the Holocene, small bands of hunters moved into the tundra and boreal forest and hunted Pleistocene megafauna. The Clovis and Folsom fluted lanceolate spear points and other tools of these PaleoIndians have been found in several locations near the district in Minnesota and Iowa. Folsom materials seem to be found in diverse settings, often associated with kill-sites although none of these sites have been identified in the district.

By 7,000 B.C. the glacial ice was north of Iowa, even north of Minnesota. Glacial Lake Agassiz in northwest Minnesota drained for the final time around 7,600 B.C. An oak and pine forest and early prairie replaced the boreal forest in western Iowa and Minnesota. The megafauna were extinct, and late PaleoIndian people adapted to reliance upon hunting bison and smaller game. Their representative artifact is the unfluted lanceolate spear point. Plano materials have been found in Iowa and across Minnesota except in Lake Agassiz. Dalton materials have been found in Iowa and southern Minnesota.

The long Archaic Period commenced just prior to the hot and dry Altithermal that peaked at approximately 6,000–4,000 B.C. Apparently the prairie-forest line moved east of the Mississippi River, surface waters reduced in size or disappeared, and many water courses changed their locations. Bison herds were much reduced in size, and the archeological record would indicate a decrease in human populations as well. The people developed a diverse array of stone tools, also bone and copper tools, and broadened their hunting and gathering to include many plant and animal species in addition to bison. Archeological sites indicate that after the Altithermal Period the human population expanded significantly. Due to the changing climate, Archaic sites are situated in areas that might appear to be unlikely based on modern topography, including within wetland basins. They would also be expected in alluvial fan deposits and other burial conditions.

Human populations continued to expand in the Woodland (or Ceramic/Mound) Period. With some exceptions, climate and vegetation patterns were similar to the modern era. The people adopted pottery and mound building from the Woodland cultures to the east but not horticulture to the same extent. Plains Woodland peoples continued reliance upon bison hunting. Sites are found on the margins of lakes, rivers, and streams.

Increasingly complex human cultures of the Late Prehistoric Period, beginning about A.D. 900, in western Iowa contended with fluctuating climatic conditions and shifting vegetation patterns. Initially during this period temperatures were warm. Agriculture became a large component of subsistence, although bison remained important when available. The bow and arrow came into use. Some groups lived in large, often fortified, villages composed of earth lodges. Exotic items indicate trade and some influence by the Mississippian culture from the southeast.

Arrival of Europeans and their Western civilization had a greater impact on Native American cultures. During the Proto-historic Period, tribes migrated from their prehistoric locations and gave up their prehistoric material culture. This change was so momentous that modern Native American tribes often cannot be identified with prehistoric antecedents. In the district, however, archeologists have identified some continuity from the Late Prehistoric through the contact period to modern tribes. The Late Prehistoric Oneota culture of northwestern Iowa was likely the antecedent for the Ioway, Oto, and perhaps Omaha tribes.

First the French, then the British, and last the Americans entered Iowa. Fur trading and early exploration had little apparent impact on the prairie. Fur traders built their fur trade posts at the confluence of rivers or on the shores of larger lakes, usually near a Native American village. In the second half of the 19th century during the Historical Period, American and European immigrants settled the prairie and started to transform Iowa into an agricultural state. The Native Americans were largely removed through treaty and war. Frontier trails and government roads, followed by railroads, improved accessibility and markets. Homesteader dugouts and sod houses were replaced with frame houses and larger farmsteads. Highway construction and farm consolidation marked the 20th century.

A review of the National Register of Historic Places showed that, as of August 1, 1996, the 35 Iowa WMD counties contained 397 properties listed on the National Register. The vast majority of these properties are buildings in towns and cities. However, a number of the properties are located in rural areas and are indicative of the kinds of historic properties that could be found in the district: farmsteads and farm buildings, especially barns; bridges, segments of the Red River Oxcart trail, mill sites, battle sites, and prehistoric archeological sites such as mounds, villages, camps, and rock art.

Cultural Resource Management

Cultural resources—such as archaeological sites, historic structures, and Native American traditional cultural properties—are important parts of the Nation's heritage. The Service strives to preserve evidence of these human occupations, which can provide valuable information regarding not only human interactions with each other, but also with the natural environment. Protection of cultural resources is accomplished in conjunction with the Service's mandate to protect fish, wildlife, and plant resources.

The Service is charged with the responsibility, under Section 106 of the National Historic Preservation Act of 1966, of identifying historic properties—cultural resources that are potentially eligible for listing on the National Register of Historic Places—that may be affected by our actions. The Service is also required to coordinate these actions with the State Historic Preservation Office, Native American tribal governments, local governments, and other interested parties. Cultural resource management in the Service is the responsibility of the regional director and is not delegated for the Section 106 process when historic properties could be affected by Service undertakings, for issuing archaeological permits, and for Indian tribal involvement.

The Archaeological Resources Protection Act of 1979 (ARPA), Section 14 requires plans to survey lands and a schedule for surveying lands with "the most scientifically valuable archaeological resources." This act also affords protection to all archeological and historic sites more than 100 years old on federal land, not just sites meeting the criteria for the National Register. It requires archeological investigations on federal land be performed in the public interest by qualified persons.

The Regional Historic Preservation Officer (RHPO) advises the regional director (RD) about procedures, compliance, and implementation of these and other cultural resource laws. The actual determinations relating to cultural resources are to be made by the RHPO for the RD for undertakings on Service fee title lands and for undertakings funded in whole or in part under the direct or indirect jurisdiction of the Service. This includes those carried out by or on behalf of the Service, those carried out with federal financial assistance, and those requiring a federal permit, license, or approval.

The responsibility of the refuge/district manager is to identify undertakings that could affect cultural resources and coordinate the subsequent review process as early as possible with the RHPO and state, tribal, and local officials. In addition, the refuge/district manager assists the RHPO by protecting archeological sites and historic properties on Service managed and administered lands, by monitoring archaeological investigations by contractors and permittees and by reporting ARPA violations.

Effects

Direct, Indirect, and Cumulative

There are no specific activities included in any of the alternatives to directly benefit cultural resources. A variety of laws prohibit any adverse effect on cultural resources as a result of management activities on public land. Additional review and approval of specific site-level projects will be completed if and when those projects are planned. Any effects to cultural resources will be determined at that time.

District Administration

Current Situation

An MOU with the Iowa DNR establishes the working relationship and how staffs are shared in the district. Through this partnership, the vast majority of the WPAs are maintained and managed by six Iowa DNR offices: Prairie Lakes, Clear Lake, Black Hawk, Great Lakes, Saylorville, and Red Rock. Current staffing at most of these units include a wildlife biologist, wildlife technician II and wildlife technician I. Some of these units also staff seasonal employees at times. These positions are not reflected in the current district budget, because they are funded by the state.

The Service does not currently pay any staff member's salary out of district funds; however, all Union Slough NWR staff as well as zoned fire and law enforcement resources are utilized and available to work in the district. Current Service staff, funded through Union Slough NWR and performing work in the district, includes project leader, deputy project leader, wildlife biologist, prescribed fire specialist, administrative technician, maintenance worker, and private lands biologist. Zone fire resources are also utilized almost entirely in the district including a Wildland Urban Interface Coordinator and Prescribed Fire Technician, located in Milford, Iowa. This staff plans and implements prescribed fire on all the WMD properties and also coordinates with partners to accomplish management goals. Funding for the fire program for both the refuge and WMD is administered through the refuge. Currently, the district receives $250,000 to fund restoration projects on district land managed by the Iowa DNR. In addition, the district receives

$15,000 for management capability. Union Slough NWR funds are also regularly used for projects in the district.

Currently the MOU describes law enforcement as a shared responsibility of the Iowa DNR and the Service. According to the MOU, the Iowa DNR assumes primary law enforcement responsibility on WPAs necessary to protect the resource. The Service has the responsibility to control use for the protection of the resource and prosecute all possible violations in federal court. The Service also assumes the responsibility for enforcing Service conservation/wetland easements. The Iowa WMD currently does not have a law enforcement officer; however, the zoned law enforcement officer located in Prairie City, Iowa and others have provided assistance as available. Therefore, the district often has difficulty dealing with easement violations in a timely manner as required by the *Region 3 Easement Manual*.

District Support

Current Situation

The Service and the Iowa DNR have a long developed partnership in the district. This partnership was established in 1978 and has been effective in facilitating goals outlined in the Prairie Pothole Joint Venture. Currently, an MOU between the two agencies codifies the partnership. In this agreement, the Service requests two million dollars annually from the Migratory Bird Commission for land acquisition and the Iowa DNR finds properties for sale, negotiates with landowners, and completes inspections. Iowa DNR also provides on the ground restoration and day-to-day management of most WPAs within the district. Properties in Kossuth County, one in Pocahontas County, and the WPA and FSA easements are managed by Union Slough NWR staff. All other district properties are managed by the Iowa DNR. Wildlife management biologists from six different Iowa DNR units manage these WPAs in their respective areas similar to state WMAs. One of the many advantages to this partnership is that properties can be targeted within priority complexes, providing excellent opportunities for public hunting and recreation.

While the Iowa WMD does not have its own Friends group, the Friends of Union Slough NWR also support the district. They support the district in many ways including financial assistance, volunteer labor, and educational outreach about the district.

Appendix A: Implementation of the Preferred Alternative

The purpose of this appendix is to make it easier for the reader to understand the preferred alternative and what would be required for its implementation. U.S. Fish and Wildlife Service (FWS, Service) policy directs that certain elements be included in a Comprehensive Conservation Plan (CCP). Most of those elements are included in the Environmental Assessment (EA)/Draft CCP. Elements dealing with the implementation of the plan, not included in the EA/Draft CCP, are included in this appendix. Following public review and comment of the EA/Draft CCP, a stand-alone CCP will be produced that draws on much of the information in the EA.

Objectives and Strategies

Goal 1: Wildlife

In partnership with the Iowa Department of Natural Resources (DNR) and others, restore a natural diversity and abundance of waterfowl, migratory birds, and other native fauna within the Iowa Wetland Management District (WMD, district).

Issue 1-1: Focal species group and life cycle

Objective 1-1-1	Over the 15-year life of the CCP, increase the breeding population of Mallard by 450 pairs and Blue-winged Teal by 450 pairs on protected wetlands (permanent state and federal ownership) in the Prairie Pothole Region (PPR) of Iowa and develop strategies, as part of the district's Inventory and Monitoring Plan, to set recruitment goals for these species in the PPR of Iowa.
Measures	• Mallard breeding population increased by 900 individuals on protected wetlands (permanent state and federal ownership) in the Prairie Pothole Region of Iowa • Blue-winged Teal breeding population increased by 900 individuals on protected wetlands (permanent state and federal ownership) in the Prairie Pothole Region of Iowa • Recruitment goals established in the district's Inventory and Monitoring Plan for Mallard and Blue-winged Teal within the PPR of Iowa
Rationale	Many species of wildlife use Waterfowl Production Areas (WPAs) in the district; however, its main purpose is for waterfowl production and to provide habitat for migratory birds, especially those that are grassland-/wetland-dependent. With limited staff and budgets it would be difficult to manage for all these species individually. Therefore, it is more practical to focus on a few species that represent a guild or group of other species. Mallard and Blue-winged Teal were chosen as focal species for the district, because their habitat and life cycle requirements are representative of a wide scale of other wetland and grassland-dependent migratory birds.

A measure that is often used to determine nesting site suitability for ground nesting birds is a visual obscurity rating (VOR) (Robel et al., 1970). After looking at VOR readings for various species of both waterfowl and other grassland-dependent birds, it was clear that both Mallard and Blue-Winged Teal encompass most of the other ground nesting birds using the PPR (Laubhan et al., 2006). These focal species also require the various wetland types represented in the PPR of Iowa, such as temporary and seasonal wetlands for pair bonding and semi-permanent to permanent wetlands for brood rearing and molting. Thus, managing the district to provide the habitat requirements of these focal species will in turn provide for the needs of many other migratory birds and resident wildlife.

According to conversations with retired Iowa DNR waterfowl biologist Guy Zenner in 2012 and 2013 and other supporting literature, Mallard, Blue-winged Teal, and Wood Ducks are the most common nesting waterfowl species in the district (Bishop et al., 1979; Fleskes, 1986; Ohde et al., 1983; Weller, 1979). Mallard pairs represented 36 percent and Blue-winged Teal pairs represented 35 percent of the breeding ducks surveyed during the four-square mile pair counts across nine counties of the district from 2006 through 2011. Wetlands surveyed during the pair count are 69 percent privately owned and 31 percent publicly owned and therefore, protected or managed by the state or federal agency (FWS, 2012a). Although breeding pair density varies from newly restored to existing wetlands, Iowa has an average of 0.9 pairs per wetland acre (FWS, 2012a). Since the district has an acquisition goal of 3,000–4,500 acres over the next 15 years, with generally a 3:1 ratio of uplands to wetlands, new habitat could be provided for approximately 900 new duck pairs. Based on the land acquisition and wetland restoration objectives in this CCP, increasing the populations from the current average from 2006 through 2011 breeding pair population of 6,406 Mallard pairs and 6,221 Blue-winged Teal pairs (state and federally protected wetland) by 450 pairs each, seems to be most realistic and achievable. This equates to an increase in the cumulative breeding population of Mallards and Blue-winged Teal by 1800. It is important to note that the wetlands restored in the district will be representative of the historic PPR of Iowa—that is, representing the area prior to Euro-American settlement.

Currently, recruitment rates are available for both Mallard and Blue-winged Teal nesting in the PPR of Iowa; however, many managers and biologists question the validity of these estimates due to the great variability in factors effecting recruitment. Studies such as nest dragging tend to be somewhat localized and difficult to extrapolate for the entire district. Brood count data is highly variable as well due to many factors such as vegetation cover on wetlands and survey methods. For these reasons, recruitment goals will not be used in this management plan but will be developed with partners in the Inventory and Monitoring Plan.

Even though the district will be adding protected and restored wetlands to the landscape, agricultural drainage on private land will likely continue to remove them. However, this objective only addresses the land that the

	Service and its partners control under permanent protection. The FWS Partners Program will continue working with private landowners using various Farm Service Agency (FSA) programs such as the U.S. Department of Agriculture's Conservation Reserve Program (CRP), the Wetlands Reserves Program (WRP), and conservation agreements and easements to reduce the loss of wetlands on private land.
Strategies	• Restore a minimum of 500 acres of existing cropland to native grassland annually as budget, staff, and weather allow. • Continue to acquire land (approximately 350–400 acres per year) per the FWS Region 3 Strategic Growth of the Small Wetland Acquisition Program's *Guidelines for Fee and Easement Purchase* and the Memorandum of Understanding (MOU) with Iowa DNR. • Convert newly acquired cropland in the uplands to native grassland ideally within two years of acquisition. (Exceptions to the two year goal will be outlined in the individual unit plan.) • Restore the wetland portion(s) of newly acquired property as soon after acquisition as funding and resources allow. • Assess the status of Objective 1-1-1 annually per Iowa DNR four-square mile survey results. • Work with Cooperative Fish and Wildlife Research Unit (Iowa State University), Iowa DNR Waterfowl Biologist and the Service's Habitat and Population Evaluation Team (HAPET) and secure funding to establish research to determine scientifically sound recruitment rates for Mallard and Blue-winged Teal populations in the PPR of Iowa as part of the development of the district's Inventory and Monitoring Plan.

Goal 2: Habitat

In partnership with the Iowa DNR and others, conserve, restore, and expand grassland and wetland habitat managing for a natural diversity of native flora within the Iowa WMD.

Issue 2-1: Prolonged decline of grassland-dependent bird populations due to the decline of grassland habitat

Objective 2-1-1	Over the 15-year life of the CCP, increase native grassland habitat by 7,500 acres with a plant diversity of 100 or more species, and provide more suitable habitat (in terms of vegetative structure as will be defined in the district's Habitat Management Plan) in existing grassland for a wide variety of grassland-dependent birds within the Iowa WMD.
Measures	• The district contains 23,687 acres of grassland habitat after the 15-year life of the plan • Twenty-five percent of existing grassland bird habitat is managed annually (e.g., hay, graze, burn, mow, tree removal) assuring that all lands are treated at least once every four years to improve vegetative structure and diversity
Rationale	As Iowa was settled, the rich soils of the state were steadily converted from an almost endless sea of diverse prairie to a very orderly succession of row crop fields. Today, more than 99.9 percent of Iowa's prairies have disappeared (Smith, 1992). The huge loss of habitat produced a corresponding reduction in grassland-dependent birds. Maintaining prairie remnants and reconstructing prairie on crop fields is a critical first step to providing essential habitat for grassland-dependent migratory birds in a landscape that has lost almost all of the historic grasslands. As a group, grassland birds have a wide range of habitat requirements that can be categorized based on their vegetation height and density preferences (Ribic et al., 2009). For example, Vesper Sparrows (*Pooecetes gramineus*) prefer short, sparse habitats maintained by disturbances such as grazing, while Sedge Wrens (*Cistothorus platensis*) prefer tall, rank cover on moist sites (Ryan, 1986). In addition, there is great variability in preference for factors other than vegetation height, including litter depth, woody vegetation tolerance, and tract size. Historically, the sheer size of the unbroken prairie provided numerous opportunities for the expression of many different habitat conditions. This allowed many different bird species to find their preferred habitat within the larger matrix of the tallgrass prairie. The fragmented nature of current grasslands is much less likely to provide that kind of habitat diversity. This is especially true if grasslands are not subjected to some kind of periodic disturbance. Annually treating a portion of fragmented grasslands with some form of disturbance like haying, grazing, mowing, or burning will increase the structural diversity across the district. A combination of all these disturbance tools applied strategically throughout the district will create a continuum from bare ground to tall, dense standing vegetation. Burning generally removes all standing vegetation and litter from the ground.

	Mowing or haying generally remove most of the standing vegetation but frequently leave some amount of litter on the ground. Depending on stocking rates, timing and/or duration, grazing can remove virtually all standing vegetation and most of the litter, or it can be used to reach some predetermined vegetation condition that can vary across a wide spectrum of structural diversity. Prairie vegetative productivity declines and extensive invasion of woody and other invasive plant species occur in the absence of disturbances such as prescribed fire, grazing, haying, or mowing (Herkert, 1994). In addition, there is evidence that there is a positive relationship between plant species diversity and ecological stability in response to climatic stressors like drought, flooding, and climate change (Tillman and Downing, 1994). Various management tools must be used to manipulate grasslands to achieve the mosaic of habitat conditions needed to attract a diversity of grassland bird species. Management actions such as haying, mowing, burning, grazing, tree removal, and rest will all have positive influences for some bird species while simultaneously having negative influences for other bird species. The careful application of these management actions across the lands in the Iowa WMD will help to ensure that a wide variety of grassland-dependent bird species can find appropriate habitat throughout the Iowa prairie pothole landscape.
Strategies	• Restore a minimum of 500 acres of existing cropland to native grassland annually as budget, staff, and weather allow. • Convert newly acquired cropland to native grassland ideally within two years of acquisition. Exceptions to the two year goal will be outlined in the individual unit plan. • Annually treat a minimum of 25 percent of district grasslands with a combination of the following types of treatment: haying, prescribed grazing, prescribed fire, mowing, or tree removal. This strategy will be employed in such a way as to have all district grassland acres receiving a treatment at least once every four years. • Develop an appropriate research and monitoring protocol to evaluate grassland bird use of WMD lands. Work with the Iowa DNR's Multiple Species Inventory and Monitoring Program if possible. • Complete the district's Habitat Management Plan that details the desired varying vegetative structure for the district's grasslands.

Issue 2-2: Upland habitat quality

Objective 2-2-1	At the end of the 15-year life of the CCP, perennial grassland, preferably native, is present on at least 97 percent of the uplands of the Iowa WMD.
Measure	• Perennial grassland covers at least 97 percent of the district uplands
Rationale	Grasslands can support greater abundance and diversity of birds than row crop fields (Rodenhouse and Best, 1983). Grasslands also provide far superior nest cover for the vast majority of ground nesting waterfowl as compared to annually tilled fields (Higgins, 1977). The main purpose of the district is to benefit waterfowl and other grassland-dependent migratory birds. Currently, about 15 percent of district land is in row crop fields. Therefore, it is a top priority to convert the vast majority of these fields to grassland as quickly as is financially and logistically possible. Planting these areas to diverse native seed mixes will help to ensure the long-term maintenance and restoration of healthy populations of native fish, wildlife, and plants and their habitats as is required by the Service's Biological Integrity, Diversity, and Environmental Health policy (FWS, 2001). The majority of new land acquisitions in the district are row crop fields. These row crop fields will be seeded to diverse prairie plantings ideally within two years of acquisition. After the crop ground in the district has been seeded to grassland, degraded remnant prairie and old, low diversity plantings, both native and non-native, will be evaluated to determine if conversion to diverse native plantings is warranted. The advantages of planting diverse native mixes include increased structural diversity with an appeal to a wide array of grassland-dependent wildlife, increased ability to deal with climatic stressors, increased ability to compete with invasive plants, and increased acreage of critically endangered tallgrass prairie habitat (see rationale for Objective 2-1-1). The district includes both food plots and fields of rotational cover that have been planted to non-native vegetation such as smooth brome and alfalfa. Food plots are discussed in Objective 2-5-1. The rotational cover exists for a variety of reasons. In some cases, these fields were enrolled in CRP and planted to non-native vegetation such as smooth brome. When the Service acquired the land, the non-native cover was already established. In other cases, smooth brome and alfalfa were planted after purchase by the Service to provide attractive cover for nesting waterfowl. Since district resources will be focused on planting the existing crop ground as well as all newly purchased crop ground to diverse native plantings, the status quo of these existing rotational cover plantings will be maintained until at least the backlog of crop ground has been planted. This will allow the district to evaluate and compare bird use and nest success in brome/alfalfa plantings versus diverse native plantings. The information gathered during the comparison will help determine the ultimate fate of the existing brome alfalfa plantings. Proposals for new rotational cover plantings will be evaluated for appropriateness and compliance with Service policies.

	Woody encroachment into grasslands can happen rapidly without proper management (Herkert, 1994). Historically, the district was dominated by tallgrass prairie. Soil surveys and historic vegetation maps based on Iowa's original land surveys from the mid-1800s indicate trees were generally restricted to the major rivers throughout most of the district. Large portions of the area were almost treeless. Today, native grasslands are extremely rare across the district. In fact, grasslands of any type are rare across the district. To provide the open grassland habitat needed by many bird and other wildlife species, district uplands will be managed to prevent the establishment and/or spread of woody vegetation. Management tools such as grazing, mowing, haying, prescribed fire, and tree removal will all be used to promote and maintain open grasslands. District lands occur in a highly altered agricultural landscape. This has contributed to the introduction and spread of aggressive, invasive plants across the district (Solecki, 1997). Grasslands are subject to invasion by some of these plants. If left unchecked, invasive plants can form monotypic stands that suppress the native plants and associated diversity (Solecki, 1997). As a result, a great deal of effort goes into managing these invasive species. Control efforts use the least destructive method possible to control and discourage invasive species, including hand pulling, mowing, grazing, haying, and chemical treatment. Multiple strategies and techniques are used to seed native grassland across the district. Purchasing seed mixes allows for the creation of an exact mix with desired percentages of cool and warm season grasses, sedges, and forbs. However, much of the time, there are variable yearly limitations in species, quantities, and budgets. Therefore, a combination of techniques to acquire seed mixes for the district must be utilized. Existing native grassland is harvested in bulk with a combine. This provides a base seed mix with some known species based on what is growing in the field but unknown amounts of those species. A seed test is usually completed to determine what species are in the mix, the relative proportion of each species, and the viability of each species. However, the sample sent in for testing is very small compared to the total seed lot harvested. Generally, the most abundant species present in the seed (usually big bluestem and/or Indiangrass) is fairly accurate, but there is much less certainty about the many other species present in the mix. As a result, a combination of purchased seed and hand harvested seed are added to the mix for more diversity. The purchased mix is usually more of what is available and affordable and not so much about what is desirable. Generally, the species most lacking in the seed harvested with the combine includes early growing plants (cool season), low growing plants (mostly cool season), and plants that grow in wet areas (sedges and others). Most cool season species have dropped their seeds by September when the harvest occurs and it is too difficult to combine in wet areas to get sedges and other wet-tolerant plants. These species can be hand collected, but getting large quantities is difficult without a large volunteer group. Furthermore, it is very difficult to find large quantities of local ecotype cool season species (grasses, forbs, sedges) to purchase. There is often reluctance by seed dealers to grow such species that are not generally in high demand especially when Service budgets

	are unstable from year to year. In the end, the most diverse seed mix that is affordable and available is planted, but percentages of certain species or groups (cool season grasses, forbs, sedges, etc.) remain unknown.
Strategies	• Restore a minimum of 500 acres of existing cropland to native grassland annually as budget, staff, and weather allow. • Convert newly acquired cropland to native grassland ideally within two years of acquisition. Exceptions to the two year goal will be outlined in the individual unit plan. • Remove encroaching woody vegetation. • Only after existing cropland is planted to native grassland, replace low diversity grasslands, both native and non-native, with higher diversity native species seed mixes including warm season grasses, cool season grasses and sedges, and forbs to increase species and structural diversity on district grasslands. • Treat/remove aggressive, invasive species to minimize loss of species and structural diversity. • Develop an appropriate research/monitoring project to compare use and nest success rates of waterfowl and other grassland-dependent birds in diverse native seedings versus brome/alfalfa seedings. • Evaluate, before planting, any new rotational cover of brome/alfalfa on district land by considering factors such as budget, seed availability, purpose, location, and ecological integrity.

Issue 2-3: Focal wetland type

Objective 2-3-1	At the end of the 15-year life of the CCP a variety of wetland types (75 percent temporary and seasonal, 15 percent semi-permanent, and 10 percent permanent) exist across the Iowa WMD as representative of the pre-Euro-American settlement landscape.
Measure	• District wetlands are 75 percent temporary and seasonal, 15 percent semi-permanent, and 10 percent permanent
Rationale	Wetland Complexes and Cycling: The Des Moines Lobe contains wetlands varying in size and water regime including temporary, seasonal, semi-permanent, and permanent (Stewart and Kantrud, 1971). The dynamic wet-dry precipitation cycles of the prairie region create corresponding water, nutrient, and vegetative cycles that maintain the productivity and ecological health of these wetlands (Euliss et al., 1999). These cycles historically maintained wetlands in a clear water state, which supports healthy wetland vegetation providing seeds, tubers, aquatic insects, and other foods used by waterfowl and other migratory birds. A cluster or "complex" of these varying wetland types is required for waterfowl to complete their life cycle including nesting, brood rearing, molting and migration (Swanson and Duebbert, 1989). This wetland variety increases the likelihood that productive and suitable habitat will be available at any given time as the water conditions vary both seasonally and from year to year. The quantity and quality of wetland habitat within Iowa not only affects the production of locally nesting birds but also affects the productivity of birds nesting farther north. These wetlands are critical in providing proper food resources to improve breeding condition of the birds when they arrive at their breeding grounds (Devries et al., 2008; Anteau and Afton, 2011). Altered Wetland Systems: The intensive agricultural development currently dominating the Des Moines Lobe has had a dramatic effect on the quantity and quality of wetland habitat within the district. Due to extensive wetland drainage only three to four percent of the historic wetland acreage currently exists within the lobe (Miller et al., 2012). These drainage systems have lowered regional water tables creating dryer water regimes within the few remaining wetlands across broad landscapes. In many cases, these systems drain hundreds or even thousands of acres containing smaller basins into a larger basin lower on the landscape. This process is commonly called "consolidation drainage." Consolidation drainage creates a more unchanging, permanent water regime in the receiving basin, which interrupts the wet-dry cycles critical to the productivity of the receiving wetlands (Weller and Fredrickson, 1974; Anteau, 2012). Because these drainage systems are interconnected, invasive and non-native fish are given a conduit to invade historically isolated wetlands leading to turbid conditions with low productivity and providing direct competition for aquatic food resources. Unchanging high water levels from consolidation drainage often prevent the fish from "freezing out" in winter as had occurred during historic wet-dry cycles (Anteau et al., 2011). Similarly, the more permanent water regime may interrupt natural predator cycles and, consequently, reduce duckling survival (Krapu et al., 2004). Surface and tile runoff from upstream cropland frequently carries excess nutrients, contaminants, and sediment into wetlands

	exacerbating the turbid state of the wetlands. As a result of these impacts, the existing wetland base within the lobe is skewed toward deeper water regimes, many of which are in poor ecological condition (Miller et al., 2012; Anteau and Afton, 2011; Anteau, 2012). Temporary and Seasonal Wetlands: Smaller temporary and seasonal wetlands are preferred by nesting Mallards during pre-nesting and egg production (Krapu et al., 1997). As a result, these basins support more pairs of breeding waterfowl than larger, more permanent basins (Kantrud and Stewart, 1977; Cowardin et al., 1995). Krapu et al., (2000) found that the survival rate of Mallard broods was substantially higher when seasonal wetlands contained water, underscoring the importance of seasonal wetlands as a major component of wetland complexes for breeding waterfowl. LaGrange and Dinsmore (1989) found that Mallards migrating through Iowa used "sheetwater" wetlands almost exclusively for feeding while using larger, more permanent basins for roosting at night. More recently, the restoration of temporary and seasonal wetlands upstream from larger basins and shallow lakes has been recognized as highly beneficial to restoring the hydrologic cycle needed to return the productive clear water state to these deeper basins (Anteau, 2012). Semi-permanent Wetlands and Shallow Lakes: In most years seasonal wetlands are dry by mid-summer. Consequently, semi-permanent wetlands and shallow lakes are typically needed for brood rearing later in the growing season (Swanson, 1986). In mid- to late-summer, larger more permanent wetlands also provide important molting habitat for post-breeding waterfowl (Swanson and Duebbert, 1989). Naturally, semi-permanent basins and shallow lakes also provide the only migratory habitat for fall migrating wetland-dependent species. Priority Wetland Complexes: The identification and restoration of landscapes with high densities of temporary and seasonal basins in proximity to brood habitat is critical to meet the population objectives for the district. Beginning in the 1980s, the Iowa DNR collaborated with the Service and other partners to identify priority wetland complexes for restoration within the Des Moines Lobe as part of the Prairie Pothole Joint Venture (PPJV) of the North American Waterfowl Management Plan (Zohrer and Garner, 2002). Since that time, the Service has been working side by side with the Iowa DNR and a variety of other partners to restore large blocks of habitat that reestablish wetland complexes as well as the underlying water tables. Many of these complexes have targeted the watersheds upstream from existing larger wetlands and shallow lakes within these identified complexes. Because these existing larger basins are at the elevation of the water table, the true hydrology of the upstream wetlands can be established more effectively. Once restored, these complexes provide productive and ecologically healthy wetland habitats critical to meeting the life cycle needs of waterfowl. Due in large part to the PPJV initiative, the wetland acreage in the lobe has increased from an estimated 29,652 acres in the 1970s to an estimated 124,367 acres in 2011 (Miller et al., 2012).
Strategies	• Engage HAPET and/or other partners to inventory, categorize, and map wetlands on WPAs within the

	district. • Ensure restoration plans for new acquisitions *address* all restorable wetland basins within the acquired property. • In acquisition planning, prioritize areas with high temporary and seasonal wetland densities, ideally within one-half mile of existing or restorable brood habitat (semi- to permanent wetlands). • Review existing WPAs for small temporary or seasonal wetland basins that may have been overlooked during initial restoration. • Remove, non-perforate and/or reroute drainage tile within WPAs to maximize water table restoration where financially, legally, and physically feasible. • Remove sediment from basins prior to restoration where soil samples document the sedimentation.

Issue 2-4: Wetland quality

Objective 2-4-1	Over the 15-year life of the CCP, wetlands within the Iowa WMD are restored and managed to provide breeding waterfowl pair densities of at least 0.9 pairs per wetland acre.
Measure	• Breeding waterfowl densities surveyed during the April and May four-square mile pair count in Iowa are at least 0.9 pairs per wetland acre
Rationale	Restoration and Management Challenges: Lowered regional water tables, consolidation drainage, invasive fish, and agricultural runoff present challenges to wetland managers within the Des Moines Lobe. In addition, invasive plants, primarily reed canarygrass and hybrid cattail, commonly form dense monotypic stands in and around wetlands (Aronson and Galatowitsch, 2008), which limit the productivity and suitability of the habitat for waterfowl. Although native to the Des Moines Lobe, cottonwood and willow trees form dense monotypic stands in and around wetlands in areas where they were historically uncommon to non-existent based on records from the original land surveys and soil surveys. These dense stands of woody vegetation often shade out the desired marsh vegetation (Fredrickson and Reid, 1988) and interrupt the open landscape needed by many birds using the adjacent grasslands as discussed in the rationale for Objective 2-2-1. A wetland that contains a 50:50 mix of emergent vegetation in relation to open water (or "hemi-marsh") provides the ideal habitat interspersion to maximize waterfowl pair densities and invertebrate food resources needed during breeding (Kaminski and Prince, 1981; Murkin et al., 1982). Nelson and Kadlec (1984) found that increased habitat interspersion among wetlands within a complex increases the suitability of the complex as a whole for breeding waterfowl. Left unmanaged, the current forces within the lobe tend to lock more permanent basins into a "lake phase" dominated by open water with little interspersed emergent vegetation while shallower wetlands become choked by reed canarygrass, hybrid cattail, and woody vegetation with little interspersed open water. In the end, the ultimate challenge is to restore and manage individual wetlands as well as wetland complexes to provide the interspersion needed to provide suitable habitat for nesting waterfowl. Wetland Restoration: The vast majority of wetland restoration within the Des Moines Lobe has occurred within the past 30 years (Miller et al., 2012). Over that time a variety of guidelines and recommendations have been developed to improve the interspersion and overall ecological health of restored wetlands. Aronson and Galatowitsch (2008) tracked the floristic characteristics of 37 wetlands restored in the southern PPR over a 19-year period. They recommended five guidelines to improve native vegetative colonization in wetland restorations, which serve as the basis for many of the strategies below. Furthermore, Galatowitsch and van der Valk (1994) stressed that restored basins need to be surrounded by a vegetative buffer to filter sediments from entering the wetland. They also recommended that all semi-permanent and permanent basins have water control structures to allow for water level manipulation. Water Management on Deeper Basins: Wet/dry cycles can be artificially simulated on deeper wetlands that

	have water control structures installed on them. Because wetlands are dynamic systems that require cycling to maintain their productivity, it is unrealistic to maintain constant hemi-marsh conditions. Weller and Spatcher (1965) recommend targeting 30 to 70 percent interspersion on manipulated wetlands while recognizing that they will invariably fall outside this range in years of extreme drought or deluge. Deeper basins on WPAs commonly have water control structures that allow for water level manipulation. However, in many cases the large wetlands and shallow lakes within a complex are under the jurisdiction of another conservation entity, most often the Iowa DNR. In recent years, the Iowa DNR and other conservation organizations have been actively developing water control systems and fish barriers on these larger basins and shallow lakes to mimic wet-dry water regimes, control rough fish, and ultimately restore the basins' ecological health (Brown et al., 2008). Many of these endeavors require infrastructure on WPAs and/or other cooperation from the Service. The Iowa DNR and Ducks Unlimited have acquired PPJV grant funding from the Service to evaluate these projects and establish thresholds for management actions on shallow lakes (Harland and Meyers, 2012). <u>Vegetation Management in Wetlands:</u> Temporary and seasonal wetlands are highly susceptible to invasion by reed canarygrass and hybrid cattail (Aronson and Galatowitsch, 2008) as well as cottonwood and willow. According to a conversation with Susan Galatowitsch in 2012, once these invasive species (particularly reed canarygrass) become dominant in these basins, the investment (labor and otherwise) required to establish a native plant community is impractical. However, management actions that create interspersion within dense vegetative stands have been successful including mowing, crushing, grazing, burning, disking, and chemical treatment (Solberg and Higgins, 1993; Sojda and Solberg, 1993; Murkin et al., 1982). Since these wetlands are essentially imbedded within the uplands, treatments will most often occur as part of an upland treatment regime (see Objective 2-1-1).
Strategies	• Prioritize restoration sites near remnant natural wetlands as source populations for recolonizing native species. • Restore semi-permanent basins, which are more floristically stable in addition to seasonal and temporary basins. • Promote natural hydrology by restoring temporary and seasonal basins, avoiding excavation of pits and the concentration of water. • As resources permit, plant vegetative stock and seeds to establish sedge meadow and wet prairie species. • Control invasive reed canarygrass, cattail, and woody vegetation early in the restoration process, if possible. • Manage for an emergent vegetation to open water ratio between 30:70 and 70:30 on basins with water control structures.

	• Periodically open dense areas of cattails and reed canarygrass within existing wetlands through a variety of tools including mowing, crushing, grazing, burning, disking, and chemical treatment. • Control dense stands of woody vegetation in existing wetlands through a variety of tools including mowing, cutting, grazing, burning, disking, dozing, and chemical treatment. • Control invasive fish in wetland complexes using a variety of techniques including installing fish barriers, eliminating transport mechanisms (tile, ditches, etc.), water level management, chemical treatment, etc. • Install water control structures on semi-permanent and permanent basins if feasible. • Continue to partner with the Iowa DNR and other conservation entities to improve the ecological health of deeper wetlands and shallow lakes not under federal jurisdiction.

Issue 2-5: Food plot use

Objective 2-5-1	During the 15-year life of the CCP, food plots are present on no greater than three percent of the upland acres within the Iowa WMD.
Measure	• Food plots cover three percent or less of the upland acres in the district
Rationale	Through the Service's partnership with the Iowa DNR, food plots have been established as an acceptable practice to provide winter food resources, reduce wildlife impacts to neighboring private lands, and provide wildlife viewing and hunting opportunities. The MOU between the Service and the Iowa DNR states that permanent food plots are permitted at levels identified in this CCP, the Iowa WMD Habitat Management Plan (to be written), and the WPA unit plans. Collaborative goals in the *North American Waterfowl Management Plan* (2012) include the following: • Goal #2: Wetlands and related habitats sufficient to sustain waterfowl populations at desired levels, while providing places to recreate and ecological services that benefit society • Goal #3: Growing numbers of waterfowl hunters, other conservationists, and citizens who enjoy and actively support waterfowl and wetlands conservation The goals in this plan focus on engaging people with nature and growing the number of hunters. Food plots in Iowa are thought of as a positive practice providing excellent viewing and hunting opportunities. Allowing food plots on WPAs within the district, albeit limited, will assist the Iowa DNR (a key Service partner) in providing hunting opportunities that will in turn gain public support for waterfowl and wetland protection. Food plots will not be necessary on all WPAs within the district. Service managers and Iowa DNR wildlife biologists will determine areas that would be appropriate for food plot placement. Given the waterfowl production/migratory bird purposes of the district, creation of edge, size of habitat patch (Warner et al., 2012), timing of disturbance related to farming practices (Korschgen and Dahlgren, 1992), and herbicide treatments of crops will be considered in the determination. Although some species of both migratory and resident birds have been documented nesting in corn and soybean row crop this may create an ecological trap (Best, 1986). For this reason managers need to be cautious with locations of food plots within the district. It would not be reasonable to have food plots on every WPA within the district and still maintain its waterfowl and migratory bird purpose. Preparing a data layer within the first year of this plan will facilitate discussions and strategic positioning of food plots on district properties. New management plans for individual units will involve evaluating the need for food plots on the tract and potential locations to lessen the impacts of disturbance, edge, chemical use, and soil erosion. Individual unit plans will also insure that food plots are not located in wetland

	basins or remnant prairie sites. Many times food plots may be better situated on adjacent state WMAs, county conservation areas or private land. Currently, approximately 15 percent of the district WPA properties are in row crop agriculture, mostly in reconstruction to prairie. It is reasonable to believe that Iowa DNR food plot objectives can be met with three percent of the district's uplands in food plots without materially detracting from the waterfowl production purpose for the district. Three percent of the district uplands equates to approximately 500 acres of the WPAs in food plots. This rate of food plot use in the district will be evaluated through the early stages of this CCP to determine the minimum acceptable level for food plots, especially given the partnership with the Iowa DNR and the district's waterfowl production purpose. Wildlife food plots generally consist of plantings of corn, soybeans, sunflowers, wheat, barley, oats, rye, buckwheat, millet, milo, and sorghum. Cultivation of these crops is usually accomplished by cooperative farmers through an agreement with Iowa DNR. Food plots will not be manipulated in any way to constitute baiting of migratory game birds and waterfowl as defined in the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703–712 P.L. 105–312) and 50 CFR 20.11–21. Standard agricultural practices will be used in farming operations with the exception that insecticide use will not be permitted. Crops will be left standing in the field, and may be harvested in the early spring each year. Some food plots that are designed, in particular, for winter survival of Ring-necked Pheasant include planting shelterbelts of conifer trees and shrubs. WPAs would not be locations considered for shelterbelt placement in conjunction with food plots. Grassland bird research suggests that some birds experience reductions in nest success and higher predation rates in grasslands that have been fragmented by trees (Johnson and Temple, 1990). Wetland vegetation can provide excellent winter cover for resident wildlife, therefore negating the need for shelterbelt plantings on WPAs.
Strategies	• Within one year of CCP approval, create a database with a spatial component, for all existing food plots across the district. • Determine criteria for proper location of food plots considering amount of edge created, size, timing of disturbance to plant, effects from pesticide application, etc. • Maintain and update the food plot database at least annually.

Strategic Land Protection

Issues 2-6 and 2-7: Decreasing purchasing power of existing funds and priority areas for acquisition

Objective 2-6-1	Over the 15-year life of the CCP, continue to pursue perpetual protection of wetland and grassland of up to 112,000 acres in the Prairie Pothole Region of Iowa in collaboration with county, state, and other federal governments, conservation organizations, private businesses, and concerned citizens. Landscape level planning tools (i.e., four-square mile survey, restorable wetlands layer, etc.) utilized by Iowa DNR and the Service's HAPET office will guide partners as to where strategic land acquisition should occur.
Measures	• All partner accomplishments of wetland and grassland perpetual protection will be tracked through the Prairie Pothole Joint Venture • Wetland and grassland perpetual protection by the Service within the PPR of Iowa is at least 200–300 acres annually
Rationale	It is estimated that the PPR of Iowa has lost at least 96 percent of the once 3.4 million wetland acres in the area. (Miller et al., 2012). Recent increases in grain prices coupled with inexpensive drainage tile has led to the rapid conversion of once avoided and untilled wetland areas to row crops. The district currently manages just over 25,000 acres of both fee title and both wetland and habitat easements. With the extensive agricultural drainage the district is experiencing on private lands it is imperative that the Service continue to acquire properties in fee title, easements, and work with partners to secure wetland habitat protection on private lands. Since 2006, the PPJV target for Iowa has been to increase breeding ducks by 25,000 pairs (extrapolated by Rex Johnson [FWS, HAPET] from U.S. Government Accountability Office, 2007). These 25,000 new pairs would need approximately 28,000 wetland acres of habitat. However, a 3:1 ratio of upland to wetland habitat is desired. Therefore, the wetland/grassland habitat target for Iowa is 112,000 acres in perpetual protection. The two million dollars requested annually by the FWS to acquire WPAs currently does not buy as much land as it once did due to ever increasing land values. However, the district still manages to grow by 200–300 acres annually, through purchase in fee title and supporting the WRP. One method the district has utilized to acquire WPA properties is to purchase the residual of WRP easement properties in the PPJV priority areas. Iowa DNR biologists negotiate with willing landowners to enroll in the WRP with the final outcome of either a permanent WPA easement through the Service or the purchase in fee title of the property as a WPA, using the Small Wetlands Program and Migratory Bird Conservation Funds (federal Duck Stamp). Using this process aids in wetland/upland restoration and reduces the final closing costs for the property. It is also essential that the district continue to provide support for the use of other FSA programs in the state that provide wetland and grassland protection, such as the CRP program.

	Since 1978 the Iowa DNR and the Service have worked under a partnership for WPA acquisition and management. Through this partnership the Iowa DNR has cooperated in identifying and delineating land of high waterfowl production capabilities. The strategy has been to acquire properties in complexes connecting state and county land with federal WPAs. Several models have been developed narrowing the focus within the district based on production potential, wetland densities, and existing conservation land. The current Iowa PPJV priority complexes were developed as a result of these modeling efforts. These priority complexes have allowed for strategic acquisition to create large areas of habitat with more completely restored hydrology. Since so much effort has been focused in these priority complexes, the Service and Iowa DNR do not want to abandon these sites. However, it is important to use the best available science and data to make sure the district is growing into areas that have the highest waterfowl production potential if cost effective. Newer and more accurate data and some potential models are becoming available through the Iowa DNR and HAPET that should be utilized to refine the existing areas of priority for acquisition. Currently, acquisition objectives focus on fee title and easement WPAs with natural or restorable wetlands possessing brood rearing cover and associated upland nesting cover in close proximity to existing public wetlands. Other areas of priority include uplands in the vicinity of wetlands where nesting cover is lacking. The ideal waterfowl production habitat to be acquired is a 3:1 ratio of uplands to wetlands. Acquisition will continue to be focused on areas identified as Iowa PPJV priority complexes; however, these will be altered if better scientific information suggests such a change.
Strategies	• Work with Iowa DNR, the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), county conservation boards, Non-Government Organizations, and others to achieve this objective. • Continue to utilize fee title and conservation easement options for acquisition of at least 200–300 acres annually. • Utilize the Service's Partners for Fish and Wildlife Program to promote conservation programs. • Support WRP proposals and other USDA conservation programs that perpetually protect wetland and grassland habitats within the Iowa WMD. • Within two years of CCP approval, work with Iowa DNR and HAPET to utilize any new models developed to select the areas of greatest waterfowl production within the district. • As priority areas are identified, develop a new Geographic Information System (GIS) layer or map book to guide acquisitions. • Apply for and secure grant funds for wetland and grassland acquisition and restoration (North American Wetlands Conservation Act, etc.).

Goal 3: People

In partnership with the Iowa DNR and others, promote understanding, appreciation, and support for the Iowa WMD as well as stewardship and understanding of the southern PPR and its native ecosystems to visitors and local residents.

Issue 3-1: District awareness and understanding

Objective 3-1-1	Within 15 years of CCP approval, provide the infrastructure on three WPAs (such as trails, kiosks, pull-offs, etc.) and information (brochure, website, Facebook page, etc.) necessary for visitors to appreciate resources in the Iowa WMD, as defined in the Visitor Services Plan.
Measures	• A minimum of 500 "hits" annually on the district website
Rationale	District users have expressed some confusion over WPA locations, ownership and management, and permitted uses. Since the district's inception, most of the properties have been managed by the Iowa DNR through an MOU. Many WPAs in the district are in complexes with Iowa DNR WMAs, and county conservation areas. WPAs that are managed through the MOU are signed with both a "Waterfowl Production Area" (FWS) sign and a "Public Hunting, Wildlife Management Area" (Iowa DNR) sign. This signing procedure can confuse users as many are not likely aware of the district's partnership, and not all state and federal public use regulations are the same. Informing visitors about this partnership and the differences in ownership is essential. The public should be able to easily find the locations of all fee title WPA properties and know what special regulations are enforced on the properties. Utilizing 21st century social media will likely prove to be essential to reach the public with such information. Large and frequently used WPAs may be excellent locations to place informational kiosks to inform the public about the importance of wetlands, WPAs, and the unique partnership of the Iowa DNR and Service. Visitors to the district deserve consistency in signage, messaging, and regulations. It may be possible to tie the district website containing regulations to a Quick Response code for mobile phones at a site such as a parking area. Newly acquired WPAs will also need the proper infrastructure to allow safe access to the property for users. Included in this access would be the development of gravel parking areas. Most parking areas would be 30 feet by 50 feet up to 80 feet by 100 feet. Users should be able to easily locate the parking areas and be able to turn vehicles around prior to exiting onto the roadway.
Strategies	• Within two years of CCP approval, update and coordinate information (regulations, planned events, hunter atlas, etc.) on the Iowa DNR and district website.

	• Within five years of CCP approval, develop an informational and regulatory brochure for the district in cooperation with Iowa DNR. • Within five years of CCP approval, identify three key locations and cost estimates to place informational kiosks interpreting the wildlife resources and partnership efforts of the district. • Over the 15-year life of the CCP, strive for consistent signage on WPAs across the district. • Continue annual coordination meetings with local Iowa DNR Wildlife Bureau staff and include Service zone law enforcement as well as Iowa DNR conservation officers. • Within four years of CCP approval, complete a Visitor Services Plan for the Iowa WMD. • Promote public use facilities on WPAs to Service partners, in particular the three enhanced WPAs referenced in Objective 3-1-1.

Issue 3-2: Appropriate recreational opportunities

Objective 3-2-1	Upon implementation of the CCP, allow uses required by regulation (hunting, recreational fishing, and recreational trapping—all in accordance with state regulations) as well as other public uses deemed appropriate and compatible across the Iowa WMD. Within four years of CCP approval, appropriate and compatible uses will be clearly articulated to the public through uniform signage, brochures, and Iowa DNR and Iowa WMD websites as identified in the Visitor Services Plan.
Measure	• Appropriate and compatible uses of the district are up-to-date and accurate on signs, brochures, and websites • Violations on WPAs are reduced by 25–30 percent over the 15 year life of the plan
Rationale	Hunting: Hunting is one of the most popular public uses of WPAs in the Iowa WMD. Waterfowl, Ring-necked Pheasant, deer, and other migratory game birds are the most hunted species on WPAs. Hunting seasons generally occur from September through mid-January each year. Some hunting use also occurs for light geese with a conservation season open from mid-January through mid-April. WPAs are open to hunting as authorized by the Code of Federal Regulations. This regulation states, "Lands acquired as 'waterfowl production areas' shall annually be open to the hunting of migratory game birds, upland game, and big game subject to the provisions of state law and regulations . . . " (50 CFR Ch. 1 (10-1-12 Edition) Part 32, Subpart A, Section 32.1. However, according to state regulations, (Iowa Code 52.1(3) *Waterfowl refuges*) "The following areas under the jurisdiction of the department of natural resources are established as waterfowl refuges where posted. It shall be unlawful to hunt ducks and geese on the following areas, where posted, at any time during the year. It shall be unlawful to trespass in any manner on the following areas, where posted, during the dates posted, both dates inclusive . . . : • Jemmerson Slough (Dickinson County); • Elk Creek Marsh (Worth County); and • Rice Lake (Winnebago and Worth Counties) within the Iowa WMD." These areas will continue to be waterfowl refuges during the implementation of the CCP. As hunting opportunities dwindle on private land due to CRP loss, hunting leases, and intensified farming practices that eliminate cover, public hunting lands have experienced an increase in use. As of 2004, public conservation lands in Iowa only accounted for 1.7 percent of the state, which is one of the lowest in the country (Zohrer, 2005). Therefore, WPAs provide an important opportunity for hunting in Iowa.

Recreational (Sport) Fishing: Sport fishing is another use allowed on WPAs per the Code of Federal Regulations. This regulation states, "Lands acquired as 'waterfowl production areas' are open to sport fishing subject to the provision of state laws and regulations . . ." (50 CFR Ch. 1 (10-1-12 Edition) Part 32, Subpart A, Section 32.4. Few areas in the Iowa WMD provide fishing opportunities; however, anglers may find perch, northern pike, largemouth bass, blue-gill, and bullhead on some WPAs. Sport fishing use can occur during any month of the year; however, winter ice fishing and early spring tend to be the most popular. Sport fishing is permitted in accordance with State of Iowa law.

Recreational Trapping: Trapping of furbearers is an additional consumptive public use of WPAs in the Iowa WMD. Furbearer trapping in the State of Iowa continues to be a popular public use but tends to fluctuate with the fur prices. WPAs are open to trapping as authorized by the Code of Federal Regulations which states, "Lands acquired as 'waterfowl production areas' shall be open to public trapping without federal permit . . . " (50 CFR Ch. 1 (10-1-12 Edition) Part 31, Subpart B, Section 31.16. Trappers are required to comply with Iowa state trapping laws and regulations.

Furbearer trapping for most species occurs from early November through the end of January with the exception of spring beaver trapping, which is open through mid-April. According to the Iowa DNR's 2012 *Furbearers Report*, the most numerous mammal species trapped in Iowa is the raccoon with 236,943 harvested during the 2010–2011 season. The second most popular furbearer trapped in Iowa is the muskrat with a total 2010–2011 season harvest of 98,079 (Iowa DNR, 2012). Both of these species occur on most WPAs within the district.

Other Wildlife-Dependent Public Uses: There are six priority public uses identified in the National Wildlife Refuge System Improvement Act of 1997 that are considered to be wildlife-dependent. Each unit of the National Wildlife Refuge System (NWRS, Refuge System) is encouraged to find these uses compatible. In the past, the Iowa WMD only considered hunting, fishing, and trapping as approved public uses based on statutory requirements. However, compatibility determinations can be used to allow the other priority public uses if deemed compatible with the purpose of the district. These other uses include wildlife observation, photography, environmental education, and interpretation.

Wildlife Observation and Photography: Wildlife observation and photography are growing activities in the United States drawing enthusiasts to natural areas such as national wildlife refuges (NWRs, refuges) and WMDs. WPAs can provide visitors with tremendous opportunities to both view and photograph wildlife species representative of the PPR. During the spring visitors can view and photograph numerous birds using the wetlands as they migrate. During the summer and fall, tallgrass prairie and wetlands can display inspiring vistas of color that change during the growing season with various wildflower blooms. Many of the WPAs in the district

	are excellent places to both observe and photograph resident wildlife such as white-tailed deer and Ring-necked Pheasant. Currently, however, there is very little infrastructure in place to support this use with the exception of parking areas, the Visitor's Center at Union Slough NWR and some pull-offs along roads. The district will evaluate potential areas for interpretive signage and observational areas to be developed. A draft compatibility determination has been developed for wildlife observation and photography (appendix G). Environmental Education: Currently WPAs are spread across eighteen counties in the state, providing excellent areas for local schools, clubs, and county programs to utilize for teaching the public about Iowa's rich wetland and prairie heritage. The Iowa WMD does not have the staff or budget to produce large environmental education programs; however, this can be mitigated by developing partnerships with County Conservation Board (CCB) naturalists. The district's WPAs provide great settings for programs about migratory birds, tallgrass prairie, and wetlands. Public understanding of how productive Iowa soils were developed from tallgrass prairie and wetlands will foster an appreciation for future wetland and prairie conservation efforts. A draft compatibility determination has been developed for environmental education (appendix G). Interpretation: Similar to environmental education, the Iowa WMD has little staff and budget to develop interpretive programs. Several events are held each year at Union Slough NWR in partnership with the Friends of Union Slough NWR including International Migratory Bird Day, National Wildlife Refuge Week, and Wood Duck banding. These events could also include or be held in the district. Currently, interpretive displays about wildlife and habitats found in the district are housed at Union Slough NWR. Areas with excellent wildlife viewing opportunities or exceptional features near higher populated areas within the district could be potential target areas for interpretive displays in the future. Partnerships with CCB naturalists in the district could be explored to provide programs/media interpreting the importance of tallgrass prairie and wetland habitat. A draft compatibility determination has been developed for interpretation (appendix G). Another growing interest is in the use of technology to interpret various natural things. One of the ways this may be accomplished in the district is through the use of virtual geocaching. This activity leads the user to a location such as a parking area on a WPA or a road pull-off, and then the user receives information about the site such as geologic features, wildlife, or the importance of wetlands and tallgrass prairie habitat. Local instructors have requested this use as a way for them to interpret the natural process of Iowa. Virtual geocaching differs from typical geocaching in that the user does not take or leave any items at the site. The end prize is to learn about the area or be directed to the refuge/district office. A draft compatibility determination has been developed for virtual geocaching (appendix G). Economic Uses for Management Purposes: Some economic uses of the district have proven to be the most efficient and cost effective tools for management. These include:

	• Wood cutting to remove woody vegetation and restore tallgrass prairie/wetland habitat. • Hay harvest to increase primary productivity in grasslands. • Livestock grazing to reduce standing litter, fertilize, mimic natural disturbance of bison and other large ungulate grazing, and increase primary productivity. With limited staff and funding, these uses are essential tools that make meeting the purpose of the district easier. Draft compatibility determinations have been developed for all of these uses (appendix G). Other Uses: A number of other uses for the Iowa WMD have been requested and considered. For various reasons, including wildlife disturbance, legality, availability on adjacent properties, damage to wildlife resources, and conflict with the district's purpose (waterfowl production and migratory birds), these uses have been deemed not appropriate. Future requests for other uses will be considered in a similar manner.
Strategies	Upon approval of the CCP, • The following uses **are allowed by Regulation and are Compatible**: hunting in accordance with state regulations, recreational fishing in accordance with state regulations, and recreational trapping in accordance with state regulations. • The following uses **are Appropriate and Compatible** (some require a special use permit or have other limitations described in the compatibility determination for that use): bicycle riding on roads and trails open to vehicular traffic, wood cutting (including firewood), hay harvest, environmental education, food plot cultivation for wildlife, virtual or waypoint geocaching, interpretation, prescribed livestock grazing, photography, and wildlife observation. • The following uses **are Not Appropriate**: dog training, horseback riding, off road vehicle use (including ATV, UTV, dirt bike, motor vehicle), overnight camping, private Ring-necked Pheasant stocking, snowmobiling, and target shooting. • Upon approval of the CCP complete an annual inspection of WMD/DNR websites to update allowable uses. • Upon approval of the CCP annually evaluate the Uniform Crime Report and any reports submitted by Iowa DNR Conservation Officers, of non-appropriate uses. • Evaluate appropriateness and compatibility (if found appropriate) of other uses upon request per the Service's appropriate use and compatibility determination policy.

	• Within four years of CCP approval, complete a Visitor Services Plan that includes the baseline violation numbers for the district. • Within four years of CCP approval complete a review of regulatory signage in the district and ensure signs in the district are consistent with the Refuge Sign Manual. • Ensure all district regulations are listed in the refuge-specific 50 CFR (Code of Federal Regulations).

Appendix B: Species Lists

In this appendix:

The following species lists were compiled by the Region 3 office from a variety of sources, and were reviewed and approved by the Iowa Wetland Management District biologist. A file of more detailed species lists and a file explaining the methodology used to compile them is in the Project File (completed under contract by the U.S. Geological Survey).

Plants

Common Name	Scientific Name	State Status	Federal Status
Alkali Muhly	*Muhlenbergia asperifolia*	S	
Alpine Rush	*Juncus alpinus*	S	
Arrow Grass	*Triglochin maritimum*	T	
Beakrush	*Rhynchospora capillacea*	T	
Bicknell Northern Crane's-bill	*Geranium bicknellii*	S	
Bigroot Prickly-pear	*Opuntia macrorhiza*	E	
Bird's-eye Primrose	*Primula mistassinica*	S	
Blue Giant Hyssop	*Agastache foeniculum*	E	
Bog Bedstraw	*Galium labradoricum*	E	
Bog Birch	*Betula pumila*	T	
Bog Willow	*Salix pedicellaris*	T	
Brittle Prickly Pear	*Opuntia fragilis*	T	
Broadleaf Water-milfoil	*Myriophyllum heterophyllum*	S	
Brook Lobelia	*Lobelia kalmii*	S	
Buckbean	*Menyanthes trifoliata*	T	
Canada Plum	*Prunus nigra*	E	
Cliff Conobea	*Leucospora multifida*	E	
Clustered Broomrape	*Orobanche fasciculata*	E	

Common Name	Scientific Name	State Status	Federal Status
Clustered Poppy-mallow	*Callirhoe alcaeoides*	T	
Coast-blite Goosefoot	*Chenopodium rubrum*	S	
Common Mare's-tail	*Hippuris vulgaris*	S	
Creeping Juniper	*Juniperus horizontalis*	T	
Creeping Sedge	*Carex chordorrhiza*	E	
Crowfoot	*Ranunculus gmelinii*	S	
Cutleaf Water-milfoil	*Myriophyllum pinnatum*	S	
Drooping Bluegrass	*Poa languida*	S	
Dry-spike Sedge	*Carex foenea*	S	
Earleaf Foxglove	*Tomanthera auriculata*	S	
Eastern Jointweed	*Polygonella articulata*	E	
False Loosestrife	*Ludwigia peploides*	S	
Fewflower Spikerush	*Eleocharis pauciflora*	S	
Fineberry Hawthorn	*Crataegus chrysocarpa*	S	
Flat Top White Aster	*Aster pubentior*	S	
Flatleaf Bladderwort	*Utricularia intermedia*	S	
Flax-leaved Aster	*Aster linariifolius*	T	
Fogg's Goosefoot	*Chenopodium foggii*	S	
Fragrant False Indigo	*Amorpha nana*	T	
Frost Grape	*Vitis vulpina*	S	
Glade Mallow	*Napaea dioica*	S	
Glandular Wood Fern	*Dryopteris intermedia*	T	
Glomerate Sedge	*Carex aggregata*	S	
Golden Corydalis	*Corydalis aurea*	T	
Grass Pink	*Calopogon tuberosus*	S	
Great Plains Ladies'-tresses	*Spiranthes magnicamporum*	S	
Green Adder's Mouth	*Malaxis unifolia*	S	
Green Arrow Arum	*Peltandra virginica*	E	

Common Name	Scientific Name	State Status	Federal Status
Green Violet	*Hybanthus concolor*	T	
Green's Rush	*Juncus greenei*	S	
Hawksbeard	*Crepis runcinata*	S	
Hill's Thistle	*Cirsium hillii*	S	
Hooded Ladies'-tresses	*Spiranthes romanzoffiana*	T	
Hooker's Orchid	*Platanthera hookeri*	T	
Illinois Pinweed	*Lechea racemulosa*	S	
Interrupted Wildrye	*Elymus diversiglumis*	S	
Kitten Tails	*Besseya bullii*	T	
Large-leaf Pondweed	*Potamogeton amplifolius*	S	
Large-leaf White Violet	*Viola incognita*	E	
Leafy Northern Green Orchid	*Platanthera hyperborea*	T	
Ledge Spikemoss	*Selaginella rupestris*	S	
Lesser Bladderwort	*Utricularia minor*	S	
Limestone Rockcress	*Arabis divaricarpa*	S	
Little Grape Fern	*Botrychium simplex*	T	
Low Hairy Ground-cherry	*Physalis pubescens*	S	
Low Nut Rush	*Scleria verticillata*	T	
Marginal Shield Fern	*Dryopteris marginalis*	T	
Meadow Bluegrass	*Poa wolfii*	S	
Meadow Spikemoss	*Selaginella eclipes*	E	
Missouri Lambsquarters	*Chenopodium missouriensis*	S	
Muskroot	*Adoxa moschatellina*	S	
Narrowleaf Pinweed	*Lechea intermedia*	T	
Narrow-leaved Milkweed	*Asclepias stenophylla*	E	
Nodding Thistle	*Cirsium undulatum*	S	
Northern Adder's-tongue	*Ophioglossum pusillum*	S	
Nuttall Pondweed	*Potamogeton epihydrus*	S	

Common Name	Scientific Name	State Status	Federal Status
Oak Fern	*Gymnocarpium dryopteris*	T	
One-sided Pyrola	*Pyrola secunda*	T	
Oval Ladies'-tresses	*Spiranthes ovalis*	T	
Ovate Spikerush	*Eleocharis ovata*	S	
Pale Green Orchid	*Platanthera flava*	E	
Pennsylvania Cinquefoil	*Potentilla pensylvanica*	T	
Philadelphia Panic Grass	*Panicum philadelphicum*	T	
Pink Milkwort	*Polygala incarnata*	T	
Pod Grass	*Scheuchzeria palustris*	S	
Prairie Bulrush	*Scirpus maritimus*	S	
Prairie Bush Clover	*Lespedeza leptostachya*	T	T
Prairie Moonwort	*Botrychium campestre*	S	
Pretty Dodder	*Cuscuta indecora*	S	
Purple Angelica	*Angelica atropurpurea*	S	
Purple Fringed Orchid	*Platanthera psycodes*	T	
Queen-of-the-prairie	*Filipendula rubra*	T	
Raccoon Grape	*Ampelopsis cordata*	S	
Ragwort	*Senecio pseudaureus*	S	
Rattle Milk-vetch	*Astragalus adsurgens*	S	
Rose Turtlehead	*Chelone obliqua*	S	
Roundleaf Sundew	*Drosera rotundifolia*	E	
Roundstem Foxglove	*Agalinis gattingeri*	T	
Rush Aster	*Aster junciformis*	T	
Sage Willow	*Salix candida*	S	
Sand Cherry	*Prunus pumila*	S	
Saskatoon Service-berry	*Amelanchier alnifolia*	S	
Scarlet Hawthorn	*Crataegus coccinea*	S	
Sedge	*Carex cephalantha*	S	

Common Name	Scientific Name	State Status	Federal Status
Shadbush	*Amelanchier sanguinea*	S	
Shining Willow	*Salix lucida*	T	
Showy Lady's Slipper	*Cypripedium reginae*	T	
Showy Milkweed	*Asclepias speciosa*	T	
Shrubby Cinquefoil	*Potentilla fruticosa*	T	
Silver Bladderpod	*Lesquerella ludoviciana*	S	
Silver Buffalo-berry	*Shepherdia argentea*	T	
Silverweed	*Potentilla anserina*	T	
Slender Arrow Grass	*Triglochin palustris*	T	
Slender Cotton Grass	*Eriophorum gracile*	T	
Slender Ladies'-tresses	*Spiranthes lacera*	T	
Slender Sedge	*Carex tenera*	S	
Slim-leaved Panic Grass	*Dichanthelium linearifolium*	T	
Small Fringed Gentian	*Gentianopsis procera*	S	
Small Spikerush	*Eleocharis parvula*	S	
Small White Lady's Slipper	*Cypripedium candidum*	S	
Smith Bulrush	*Scirpus smithii*	S	
Smooth Black-haw	*Viburnum prunifolium*	S	
Spear Needlegrass	*Stipa comata*	S	
Spiral Pondweed	*Potamogeton spirillus*	S	
Spring Avens	*Geum vernum*	S	
Spurge	*Euphorbia missurica*	S	
Straight-leaf Pondweed	*Potamogeton strictifolius*	S	
Swamp Thistle	*Cirsium muticum*	S	
Sweet Indian Plantain	*Cacalia suaveolens*	T	
Tall Cotton Grass	*Eriophorum angustifolium*	S	
Three-seeded Mercury	*Acalypha ostryifolia*	S	
Toad Rush	*Juncus bufonius*	S	

Common Name	Scientific Name	State Status	Federal Status
Toothcup	*Rotala ramosior*	S	
Tumble Grass	*Schedonnardus paniculatus*	S	
Tunnel-formed Penstemon	*Penstemon tubiflorus*	S	
Valerian	*Valeriana edulis*	S	
Vasey Pondweed	*Potamogeton vaseyi*	S	
Virginia Rockcress	*Sibara virginica*	S	
Water Marigold	*Megalodonta beckii*	E	
Water Milfoil	*Myriophyllum verticillatum*	S	
Water Parsnip	*Berula erecta*	T	
Water Shield	*Brasenia schreberi*	S	
Water Starwort	*Callitriche heterophylla*	S	
Waterwort	*Elatine triandra*	S	
Waxleaf Meadowrue	*Thalictrum revolutum*	E	
Waxyfruit Hawthorn	*Crataegus pruinosa*	S	
Western Parsley	*Lomatium orientale*	T	
Western Prairie Fringed Orchid	*Platanthera praeclara*	T	T
White Prairie Aster	*Aster falcatus*	S	
White Water Crowfoot	*Ranunculus circinatus*	S	
White-stem Pondweed	*Potamogeton praelongus*	S	
Widgeon-grass	*Ruppia cirrhosa*	S	
Winterberry	*Ilex verticillata*	E	
Wolf Spike-rush	*Eleocharis wolfii*	S	
Woodland Horsetail	*Equisetum sylvaticum*	T	
Wooly Milkweed	*Asclepias lanuginosa*	T	
Yellow Monkey Flower	*Mimulus glabratus*	T	
Yellow Trout-lily	*Erythronium americanum*	T	
Yellow-eyed Grass	*Xyris torta*	E	
E = Endangered, T = Threatened, S = Species of Concern			

Mammals

Common Name	Scientific Name	State Status	Federal Status
Badger	*Taxidea taxus*		
Beaver	*Caster canadensis*		
Big Brown Bat	*Eptesicus fuscus*		
Bobcat	*Lynx rufus*		
Coyote	*Canis latrans*		
Deer Mouse	*Peromyscus maniculatus*		
Eastern Chipmunk	*Tamias striatus*		
Eastern Cottontail	*Sylvilagus floridanus*		
Eastern Mole	*Scalopus aquaticus*		
Eastern Pipistrelle	*Pipistrellus subflavus*		
Ermine	*Mustela erminea*		
Evening Bat	*Nycticeius humeralis*		
Flying Squirrel	*Glaucomys volans*	S	
Fox Squirrel	*Sciurus niger*		
Franklin'S Ground Squirrel	*Spermophilus franklinii*		
Gray Fox	*Urocyon cinereoargenteus*		
Gray Squirrel	*Sciurus carolinenesis*		
Hayden'S Shrew	*Sorex haydeni*		
Hoary Bat	*Lasiurus cinereus*		
Indiana Bat	*Myotis sodalis*	E	E
Least Weasel	*Mustela nivalis*		
Little Brown Bat	*Myotis lucifugus*		
Long-Tailed Weasel	*Mustela frenata*		
Masked Shrew	*Sorex cinereus*		
Meadow Jumping Mouse	*Zapus hudsonius*		
Meadow Vole	*Microtus pennsylvanicus*		
Mink	*Mustela vison*		

Common Name	Scientific Name	State Status	Federal Status
Muskrat	*Ondatra zibethicus*		
Northern Grasshopper Mouse	*Onychomys leucogaster*		
Northern Myotis	*Myotis septentrionalis*		
Northern Short-Tailed Shrew	*Blarina brevicauda*		
Plains Pocket Gopher	*Geomys bursarius*		
Prairie Vole	*Microtus ochrogaster*		
Raccoon	*Procyon lotor*		
Red Bat	*Lasiurus borealis*		
Red Fox	*Vulpes vulpes*		
Red Squirrel	*Tamiasciurus hudsonicus*		
River Otter	*Lutra canadensis*		
Silver-Haired Bat	*Lasionycteris noctivagans*		
Southern Bog Lemming	*Synaptomys cooperi*	T	
Spotted Skunk	*Spilogale putorius*	E	
Striped Skunk	*Mephitis mephitis*		
Thirteen-Lined Ground Squirrel	*Spermophilus tridecemlineatus*		
Virginia Opossum	*Didelphis virginiana*		
Western Harvest Mouse	*Reithrodontomys megalotis*		
White-Footed Mouse	*Peromyscus leucopus*		
White-Tailed Deer	*Odocoileus virginianus*		
White-Tailed Jackrabbit	*Lepus townsendii*		
Woodchuck	*Marmota monax*		
Woodland Vole	*Microtus pinetorum*		
E = Endangered, T = Threatened, S = Special Concern			

Birds

Common Name	Scientific Name	State Status	U.S.	N.S.
Acadian Flycatcher	*Empidonax virescens*	SGCN		X
Alder Flycather	*Empidonax alnorum*		X	X
American Avocet	*Recurvirostra americana*	SGCN	X	
American Bittern****	*Botaurus lentiginosus*	SGCN	X	
American Black Duck	*Anas rubripes*		X	
American Coot	*Fulica americana*		X	X
American Crow	*Corvus brachyrhynchos*		X	X
American Golden-Plover	*Pluvialis dominica*	SGCN	X	X
American Goldfinch	*Carduelis tristis*		X	X
American Kestrel	*Falco sparverius*		X	X
American Pipit	*Anthus rubescens*		X	
American Redstart	*Setophaga ruticilla*		X	X
American Robin	*Turdus migratorius*		X	X
American Tree Sparrow	*Spizella arborea*		X	X
American White Pelican	*Pelecanus erythrorhynchos*	SGCN	X	X
American Wigeon	*Anas americana*		X	
American Woodcock	*Scolopax minor*	SGCN	X	X
Baird's Sandpiper	*Calidris bairdii*		X	
Bald Eagle****	*Haliaeetus leucocephalus*	E, SGCN	X	X
Bank Swallow	*Riparia riparia*		X	X
Barn Swallow	*Hirundo rustica*		X	X
Barred Owl	*Strix varia*		X	X
Bay-breasted Warbler	*Dendroica castanea*		X	X
Bell's vireo	*Vireo bellii*	SGCN		X
Belted Kingfisher	*Ceryle alcyon*		X	X
Black Tern****	*Chlidonias niger*	S, SGCN	X	X
Black-and-white Warbler	*Mniotilta varia*	SGCN	X	X

Common Name	Scientific Name	State Status	U.S.	N.S.
Black-bellied Plover	*Pluvialis squatarola*		X	X
Black-billed Cuckoo****	*Coccyzus erythropthalmus*	SGCN	X	X
Blackburnian Warbler	*Dendroica fusca*		X	X
Black-capped Chickadee	*Parus atricapillus*		X	X
Black-crowned Night-Heron	*Nycticorax nycticorax*	SGCN	X	X
Black-necked Stilt	*Himantopus mexicanus*		X	
Blackpoll Warbler	*Dendroica striata*		X	X
Black-throated Green Warbler	*Dendroica virens*		X	X
Blue Jay	*Cyanocitta cristata*		X	X
Blue-gray Gnatcatcher	*Polioptila caerulea*		X	X
Blue-winged Teal	*Anas discors*		X	X
Blue-winged Warbler	*Vermivora pinus*	SGCN		X
Bobolink	*Dolichonyx oryzivorus*	SGCN	X	X
Bonaparte's Gull	*Larus philadelphia*		X	X
Brewer's Blackbird	*Euphagus cyanocephalus*		X	
Broad-winged Hawk	*Buteo platypterus*	SGCN	X	X
Brown Creeper	*Certhia americana*	SGCN	X	X
Brown Thrasher	*Toxostoma rufum*		X	X
Brown-headed Cowbird	*Molothrus ater*		X	X
Buff-breasted Sandpiper****	*Tryngites subruficollis*	SGCN	X	
Bufflehead	*Bucephala albeola*		X	
Canada Goose	*Anser fabalis*		X	X
Canada Warbler	*Wilsonia canadensis*	SGCN	X	X
Canvasback	*Aythya valisineria*	SGCN	X	
Cape May Warbler	*Dendroica tigrina*			X
Caspian Tern	*Sterna caspia*		X	
Cattle Egret	*Bubulcus ibis*		X	X
Cedar Waxwing	*Bombycilla cedrorum*		X	X

Common Name	Scientific Name	State Status	U.S.	N.S.
Cerulean warbler	*Dendroica cerulea*	SGCN		X
Chestnut-sided Warbler	*Dendroica pensylvanica*		X	X
Chimney Swift	*Chaetura pelagica*		X	X
Chipping Sparrow	*Spizella passerina*		X	X
Cinnamon Teal	*Anas cyanoptera*		X	
Clay-colored Sparrow	*Spizella pallida*		X	X
Cliff Swallow	*Hirundo pyrrhonota*		X	X
Common Barn Owl**	*Tyto alba*	E, SGCN		
Common Goldeneye	*Bucephala clangula*		X	
Common Grackle	*Quiscalus quiscula*		X	X
Common Loon	*Gavia immer*		X	
Common Merganser	*Mergus merganser*		X	
Common Moorhen	*Gallinula chloropus*	SGCN	X	
Common Nighthawk	*Chordeiles minor*	SGCN	X	X
Common Redpoll	*Carduelis flammea*		X	
Common Snipe	*Gallinago gallinago*		X	X
Common Tern	*Sterna hirundo*		X	
Common Yellowthroat	*Geothlypis trichas*		X	X
Connecticut Warbler	*Oporornis agilis*			X
Cooper's Hawk	*Accipiter cooperii*		X	X
Dark-eyed Junco	*Junco hyemalis*		X	X
Dickcissel****	*Spiza americana*	SGCN	X	X
Double-crested Cormorant	*Phalacrocorax auritus*		X	X
Downy Woodpecker	*Picoides pubescens*		X	X
Dunlin	*Calidris alpina*		X	
Eared Grebe	*Podiceps nigricollis*		X	
Eastern Bluebird	*Sialia sialis*		X	X
Eastern Kingbird	*Tyrannus tyrannus*		X	X

Common Name	Scientific Name	State Status	U.S.	N.S.
Eastern Meadowlark	*Sturnella magna*	SGCN	X	X
Eastern Phoebe	*Sayornis phoebe*		X	X
Eastern Screech-Owl	*Otus asio*		X	X
Eastern Towhee	*Pipilo erythrophthalmus*	SGCN	X	X
Eastern Wood-Pewee	*Contopus virens*		X	X
European Starling	*Sturnus vulgaris*		X	X
Field Sparrow	*Spizella pusilla*	SGCN	X	X
Forster's Tern	*Sterna forsteri*	S, SGCN	X	
Fox Sparrow	*Passerella iliaca*		X	X
Franklin's Gull	*Larus pipixcan*		X	X
Gadwall	*Anas strepera*		X	X
Golden Eagle	*Aquila chrysaetos*		X	
Golden-crowned Kinglet	*Regulus satrapa*		X	X
Golden-winged Warbler	*Vermivora chrysoptera*	SGCN	X	X
Grasshopper Sparrow****	*Ammodramus savannarum*	SGCN	X	X
Gray Catbird	*Dumetella carolinensis*		X	X
Gray Partridge	*Perdix perdix*		X	
Gray-cheeked Thrush	*Catharus minimus*		X	X
Great Blue Heron	*Ardea herodias*		X	X
Great Crested Flycatcher	*Myiarchus crinitus*		X	X
Great Egret	*Ardea albus*		X	
Great Horned Owl	*Bubo virginianus*		X	X
Great White-fronted Goose	*Anser albifrons*		X	
Greater Scaup	*Aythya marila*		X	
Greater Yellowlegs	*Tringa melanoleuca*	SGCN	X	X
Great-tailed Grackle	*Quiscalus mexicanus*			X
Green Heron	*Butorides virescens*		X	X
Green-winged Teal	*Anas crecca*		X	X

Common Name	Scientific Name	State Status	U.S.	N.S.
Hairy Woodpecker	*Picoides villosus*		X	X
Harris's Sparrow	*Zonotrichia querula*		X	X
Henslow's Sparrow	*Ammodramus henslowii*	T, SGCN		X
Hermit Thrush	*Catharus guttatus*		X	X
Herring Gull	*Larus argentatus*		X	X
Hooded Merganser	*Lophodytes cucullatus*		X	
Hooded warbler*	*Wilsonia citrina*	SGCN		
Horned Grebe****	*Podiceps auritus*		X	
Horned Lark	*Eremophila alpestris*		X	X
House Finch	*Carpodacus mexicanus*		X	X
House Sparrow	*Passer domesticus*		X	X
House Wren	*Troglodytes aedon*		X	X
Hudsonian Godwit****	*Limosa haemastica*	SGCN	X	
Indigo Bunting	*Passerina cyanea*		X	X
Kentucky Warbler	*Oporornis formosus*	SGCN		X
Killdeer	*Charadrius vociferus*		X	X
King Rail	*Rallus limicola*	E, SGCN	X	
Lapland Longspur	*Calcarius lapponicus*		X	X
Lark sparrow	*Chondestes grammacus*	SGCN		X
Le Conte's Sparrow	*Ammodramus leconteii*	SGCN	X	X
Least Bittern****	*Ixobrychus exilis*	SGCN	X	X
Least Flycatcher	*Empidonax minimus*	SGCN	X	X
Least Sandpiper	*Calidris minutilla*		X	X
Least Tern***	*Sterna antillarum*	E, SGCN	X	
Lesser Scaup	*Aythya affinis*		X	X
Lesser Yellowlegs	*Tringa flavipes*	SGCN	X	X
Lincoln's Sparrow	*Melospiza lincolnii*		X	X
Little Blue Heron	*Egretta caerulea*		X	

Common Name	Scientific Name	State Status	U.S.	N.S.
Loggerhead Shrike	*Lanius ludovicianus*	SGCN	X	X
Long-billed Curlew****	*Numenius americanus*		X	
Long-billed Dowitcher	*Limnodromus scolopaceus*		X	X
Long-eared Owl	*Asio otus*	T, SGCN	X	
Louisiana Waterthrush	*Seiurus motacilla*	SGCN		X
Magnolia Warbler	*Dendroica magnolia*		X	X
Mallard	*Anas platyrhynchos*		X	X
Marbled Godwit****	*Limosa Fedoa*	SGCN	X	
Marsh Wren	*Cistothorus palustris*		X	X
Merlin	*Falco columbarius*		X	
Mourning Dove	*Zenaida macroura*		X	X
Mourning Warbler	*Oporornis philadelphia*		X	X
Nashville Warbler	*Vermivora ruficapilla*		X	X
Northern Bobwhite	*Colinus virginianus*	SGCN	X	X
Northern Cardinal	*Cardinalis cardinalis*		X	X
Northern Flicker	*Colaptes auratus*		X	X
Northern Goshawk	*Accipiter gentilis*		X	
Northern Harrier	*Circus cyaneus*	E, SGCN	X	X
Northern Mockingbird	*Mimus polyglottos*	SGCN		X
Northern Oriole	*Icterus galbula*		X	X
Northern Parula	*Parula americana*			X
Northern Pintail	*Anas acuta*	SGCN	X	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*		X	X
Northern Saw-whet Owl	*Aegolius acadicus*		X	
Northern Shoveler	*Anas clypeata*		X	X
Northern Shrike	*Lanius excubitor*		X	X
Northern Waterthrush	*Seiurus noveboracensis*		X	X
Olive-sided Flycatcher	*Contopus cooperi*		X	X

Common Name	Scientific Name	State Status	U.S.	N.S.
Orange-crowned Warbler	*Vermivora celata*		X	X
Orchard Oriole	*Icterus spurius*		X	X
Osprey	*Pandion haliaetus*	SGCN	X	X
Ovenbird	*Seiurus aurocapillus*		X	X
Palm Warbler	*Dendroica palmarum*		X	X
Pectoral Sandpiper	*Calidris melanotos*		X	X
Peregrine Falcon****	*Falco peregrinus*	E, SGCN	X	
Philadelphia Vireo	*Vireo philadelphicus*		X	X
Pied-billed Grebe	*Podilymbus podiceps*		X	X
Pileated Woodpecker	*Dryocopus pileatus*			X
Pine Siskin	*Carduelis pinus*		X	X
Prairie Falcon	*Falco mexicanus*		X	
Prothonotary Warbler	*Protonotaria citrea*	SGCN		X
Purple Finch	*Carpodacus purpureus*		X	X
Purple Martin	*Progne subis*		X	X
Red Knot	*Calidris canutus*		X	
Red-bellied Woodpecker	*Melanerpes carolinus*		X	X
Red-breasted Merganser	*Mergus serrator*		X	
Red-breasted Nuthatch	*Sitta canadensis*		X	X
Red-eyed Vireo	*Vireo olivaceus*		X	X
Redhead	*Aythya americana*	SGCN	X	
Red-headed Woodpecker****	*Melanerpes erythrocephalus*	SGCN	X	X
Red-necked Grebe	*Podiceps grisegena*		X	X
Red-necked Phalarope	*Phalaropus lobatus*		X	
Red-shouldered Hawk	*Buteo lineatus*	E, SGCN	X	
Red-tailed Hawk	*Buteo jamaicensis*		X	X
Red-winged Blackbird	*Agelaius phoeniceus*		X	X
Ring-billed Gull	*Larus delawarensis*		X	X

Common Name	Scientific Name	State Status	U.S.	N.S.
Ring-necked Duck	*Aythya collaris*		X	X
Ring-necked Pheasant	*Phasianus colchicus*		X	X
Rock Dove	*Columba livia*		X	X
Rose-breasted Grosbeak	*Pheucticus ludovicianus*		X	X
Ross' Goose	*Anser rossii*		X	
Rough-legged Hawk	*Buteo lagopus*		X	X
Ruby-crowned Kinglet	*Regulus calendula*		X	X
Ruby-throated Hummingbird	*Archilochus colubris*		X	X
Ruddy Duck	*Oxyura jamaicensis*		X	X
Ruddy Turnstone	*Arenaria interpres*		X	
Rusty Blackbird	*Euphagus carolinus*	SGCN	X	X
Sanderling	*Calidris alba*		X	
Sandhill Crane	*Grus canadensis*	SGCN	X	X
Savannah Sparrow	*Passerculus sandwichensis*		X	X
Scarlet Tanager	*Piranga olivacea*		X	X
Sedge Wren	*Cistothorus platensis*	SGCN	X	X
Semipalmated Plover	*Charadrius semipalmatus*		X	X
Semipalmated Sandpiper	*Calidris pusilla*		X	
Sharp-shinned Hawk	*Accipiter striatus*		X	X
Short-billed Dowitcher****	*Limnodromus griseus*	SGCN	X	X
Short-eared Owl****	*Asio flammeus*	E, SGCN	X	X
Snow Bunting	*Plectrophenax nivalis*		X	X
Snow Goose	*Anser caerulescens*		X	X
Snowy Egret	*Egretta thula*		X	
Snowy Owl	*Nyctea scandiaca*		X	
Solitary Sandpiper****	*Tringa solitaria*	SGCN	X	X
Solitary Vireo	*Vireo solitarius*		X	X
Song Sparrow	*Melospiza melodia*		X	X

Common Name	Scientific Name	State Status	U.S.	N.S.
Sora	*Porzana carolina*		X	X
Spotted Sandpiper	*Actitis macularia*		X	X
Stilt Sandpiper	*Micropalama himantopus*	SGCN	X	
Summer Tanager	*Piranga rubra*			X
Swainson's Hawk****	*Buteo swainsoni*	SGCN	X	X
Swainson's Thrush	*Catharus ustulatus*		X	X
Swamp Sparrow	*Melospiza georgiana*		X	X
Tennesse Warbler	*Vermivora peregrina*		X	X
Tree Swallow	*Tachycineta bicolor*		X	X
Tricolored Heron	*Egretta tricolor*		X	
Trumpeter Swan	*Cygnus buccinator*	SGCN	X	
Tufted Titmouse	*Parus bicolor*			X
Tundra Swan	*Cygnus columbianus*		X	
Turkey Vulture	*Cathartes aura*		X	X
Upland Sandpiper****	*Bartramia longicauda*	SGCN	X	X
Veery	*Catharus fuscescens*	SGCN	X	X
Vesper Sparrow	*Pooecetes gramineus*		X	X
Virginia Rail	*Rallus limicola*		X	
Warbling Vireo	*Vireo gilvus*		X	X
Western Grebe	*Aechmophorus occidentalis*		X	X
Western Meadowlark	*Sturnella neglecta*		X	X
Western Sandpiper	*Calidris mauri*		X	
Whip-poor-will	*Caprimulgus vociferus*	SGCN		X
White-breasted Nuthatch	*Sitta carolinensis*		X	X
White-crowned Sparrow	*Zonotrichia leucophrys*		X	X
White-eyed vireo	*Vireo griseus*	SGCN		X
White-faced Ibis	*Plegadis chihi*		X	
White-rumped Sandpiper	*Calidris fuscicollis*		X	

Common Name	Scientific Name	State Status	U.S.	N.S.
White-throated Sparrow	*Zonotrichia albicollis*		X	X
Wild Turkey	*Meleagris gallopavo*		X	X
Willet	*Catoptrophorus semipalmatus*		X	
Willow Flycatcher	*Empidonax traillii*	SGCN	X	X
Wilson's Phalarope	*Phalaropus tricolor*	SGCN	X	X
Wilson's Warbler	*Wilsonia pusilla*		X	X
Wood Duck	*Aix sponsa*		X	X
Wood thrush*	*Hylocichla mustelina*	SGCN		
Worm-eating Warbler*	*Helmitheros vermivorus*	SGCN		
Yellow Warbler	*Dendroica petechia*		X	X
Yellow-bellied Flycatcher	*Empidonax flaviventris*		X	X
Yellow-bellied Sapsucker	*Sphyrapicus varius*		X	X
Yellow-billed Cuckoo	*Coccyzus americanus*	SGCN	X	X
Yellow-breasted Chat	*Icteria virens*	SGCN	X	X
Yellow-crowned Night-Heron	*Nyctanassa violacea*	SGCN	X	
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*		X	X
Yellow-rumped Warbler	*Dendroica coronata*		X	X
Yellow-throated Vireo	*Vireo flavifrons*		X	X
Yellow-throated Warbler	*Dendroica dominica*			X

E = Endangered, T = Threatened, S = Special Concern, SGCN = Species of Greatest Conservation Need, U.S. = Union Slough NWR Checklist, N.S. = Neal Smith NWR Checklist

*From Iowa Breeding Bird Atlas, **From Iowa Natural Areas Inventory, ***Federally Endangered

****U.S. Fish and Wildlife Service – Region 3 2008 Birds of Conservation Concern

Fish and Mussels

Common Name	Scientific Name	State Status	Federal Status
American Brook Lamprey	*Lampetra appendix*	T, SGCN	
American Eel	*Anguilla rostrata*		
Banded Darter	*Etheostoma zonale*		
Banded Killifish	*Fundulus diaphanus*		
Bigmouth Buffalo	*Ictiobus cyprinellus*		
Bigmouth Shiner	*Notropis dorsalis*		
Black Buffalo	*Ictiobus niger*	SGCN	
Black Bullhead	*Ameiurus melas*		
Black Crappie	*Pomoxis nigromaculatus*		
Black Redhorse	*Moxostoma duquesnei*	T, SGCN	
Blackchin Shiner	*Notropis heterodon*		
Blacknose Dace	*Rhinichthys atratulus*		
Blacknose Shiner	*Notropis heterolepis*	T, SGCN	
Blackside Darter	*Percina caprodes*	SGCN	
Blackstripe Topminnow	*Fundulus notatus*		
Blue Sucker	*Cycleptus elongatus*	SGCN	
Bluegill	*Lepomis macrochirus*		
Bluntnose Minnow	*Pimephales notatus*		
Blutnose Darter	*Etheostoma chlorosomum*		
Bowfin	*Amia calva*	SGCN	
Brassy Minnow	*Hybognathus hankinsoni*		
Brook Silverside	*Labidesthes sicculus*		
Brook Stickleback	*Culaea inconstans*		
Brook Trout	*Salvelinus fontinalis*	SGCN	
Brown Bullhead	*Ameiurus nebulosus*	SGCN	
Brown Trout	*Salmo trutta*		
Bullhead (Sheepnose)	*Plethobasus cyphus*	SGCN	

Common Name	Scientific Name	State Status	Federal Status
Bullhead Minnow	*Pimephales vigilax*		
Butterfly	*Ellipsaria lineolata*	SGCN	
Central Mudminnow	*Umbra limi*	SGCN	
Central Stoneroller	*Campostoma anomalum*		
Chain Pickerel	*Esox niger*		
Channel Catfish	*Ictalurus punctatus*		
Chestnut Lamprey	*Ichthyomyzon castaneus*	T	
Common Carp	*Cyprinus carpio*		
Common Shiner	*Luxilus cornutus*		
Creek Chub	*Semotilus atromaculatus*		
Creek Heelsplitter	*Lasmigona compressa*	T, SGCN	
Creeper	*Strophitus undulatus*	T, SGCN	
Cylinder	*Anodontoides ferussacianus*	SGCN	
Cylindrical Papershell	*Anodontoides ferussacianus*	T, SGCN	
Ebonyshell	*Fusconaia ebena*	SGCN	
Elktoe	*Alasmidonta marginata*	SGCN	
Ellipse	*Venustaconcha ellipsiformis*	T, SGCN	
Emerald Shiner	*Notropis atherinoides*		
Fantail Darter	*Etheostoma flabellare*		
Fathead Minnow	*Pimephales promelas*		
Fawnsfoot	*Truncilla donaciformis*	SGCN	
Flat floater	*Anodonta suborbiculata*	SGCN	
Flathead Catfish	*Pylodictis olivaris*		
Flathead Chub	*Platygobio gracilis*	SGCN	
Fluted shell	*Lasmigona costata*	SGCN	
Freshwater Drum	*Aplodinotus grunniens*		
Gilt Darter	*Percina evides*		
Gizzard Shad	*Dorosoma cepedianum*		

Common Name	Scientific Name	State Status	Federal Status
Golden Redhorse	*Moxostoma erythrurum*		
Golden Shiner	*Notemigonus crysoleucas*		
Goldeye	*Hiodon alosoides*	SGCN	
Goldfish	*Carassius auratus*		
Grass Carp	*Ctenopharyngodon idella*		
Grass Pickerel	*Esox americanus*	T, SGCN	
Gravel Chub	*Erimytax x-punctatus*	SGCN	
Green Sunfish	*Lepomis cyanellus*		
Hickorynut	*Obovaria olivaria*	SGCN	
Higgins' eye pearlymussel	*Lampsilis higginsi*	SGCN	
Highfin Carpsucker	*Carpiodes velifer*		
Hornyhead Chub	*Nocomis biguttatus*		
Iowa Darter	*Etheostoma exile*		
Johnny Darter	*Etheostoma nigrum*		
Lake chub	*Couesius plumbeus*		
Largemouth Bass	*Micropterus salmoides*		
Largescale Stoneroller	*Campostoma oligolepis*	SGCN	
Least Darter	*Etheostoma microperca*	E, SGCN	
Lilliput	*Toxolasma parvus*	SGCN	
Longear Sunfish	*Lepomis megalotis*		
Longnose Dace	*Rhinichthys cataractae*	SGCN	
Longnose Gar	*Lepisosteus osseus*		
Mimic Shiner	*Notropis volucellus*		
Mississippi Silvery Minnow	*Hybognathus nuchalis*	SGCN	
Monkeyface	*Quadrula metanerva*	SGCN	
Mooneye	*Hiodon tergisus*		
Mud Darter	*Etheostoma asprigene*		
Muskellunge	*Esox masquinongy*		

Common Name	Scientific Name	State Status	Federal Status
Northern Hogsucker	*Hypentelium nigricans*		
Northern Logperch	*Percina caprodes*		
Northern Pike	*Esox lucius*		
Northern Rock Bass	*Ambloplites rupestris*		
Orangespotted Sunfish	*Lepomis humilis*		
Orangethroat Darter	*Etheostoma spectabile*	T	
Ozark Minnow	*Notropis nubilus*	SGCN	
Ozark Pigtoe	*Fusconaia ozarkensis*	E, SGCN	
Paddlefish	*Polyodon spathula*	SGCN	
Pallid Shiner	*Notropis amnis*		
Paper pondshell	*Utterbackia imbecillis*	SGCN	
Pearl Dace	*Margariscus margarita*	E, SGCN	
Pistolgrip	*Tritogonia verrucosa*	E, SGCN	
Plains Minnow	*Hybognathus placitus*	SGCN	
Plains Topminnow	*Fundulus sciadicus*		
Pondhorn	*Uniomerus tetralasmus*	SGCN	
Pondmussel	*Ligumia subrostrata*	SGCN	
Pugnose Shiner	*Notropis anogenus*	E, SGCN	
Pumpkinseed	*Lepomis gibbosus*		
Purple pimpleback	*Cyclonaias tuberculata*	SGCN	
Quillback Carpsucker	*Carpiodes cyprinus*		
Rainbow Darter	*Etheostoma caeruleum*		
Rainbow Trout	*Oncorhynchus mykiss*		
Red Shiner	*Cyprinella lutrensis*		
Redear Sunfish	*Lepomis microlophus*		
Redfin Shiner	*Lythrurus umbratilis*	SGCN	
River Carpsucker	*Carpiodes carpio*		
River Redhorse	*Moxostoma carinatum*		

Common Name	Scientific Name	State Status	Federal Status
River Shiner	*Notropis blennius*		
Rock pocketbook	*Arcidens confragosus*	SGCN	
Rosyface Shiner	*Notropis rubellus*		
Round Pigtoe	*Pleurobema sintoxia*	E, SGCN	
Sand Shiner	*Notropis stramineus*		
Sauger	*Stizostedion canadense*		
Shorthead Redhorse	*Moxostoma macrolepidotum*		
Shortnose Gar	*Lepisosteus platostomus*		
Shovelnose Sturgeon	*Scaphirhynchus platorynchus*	SGCN	
Silver Chub	*Macrhybopsis storeriana*		
Silver Lamprey	*Ichthyomyzon unicuspis*	SGCN	
Silver Redhorse	*Moxostoma anisurum*		
Slender Madtom	*Noturus exilis*	SGCN	
Slenderhead Darter	*Percina phoxocephala*	SGCN	
Slimy Sculpin	*Cottus cognatus*	SGCN	
Slippershell	*Alasmidonta viridis*	SGCN	
Slippershell Mussel	*Alasmidonta viridis*	E, SGCN	
Slough sandshell	*Lampsilis teres teres*	SGCN	
Smallmouth Bass	*Micropterus dolomieu*		
Smallmouth Buffalo	*Ictiobus bubalus*		
Southern Redbelly Dace	*Phoxinus erythrogaster*		
Speckled Chub	*Macrhybopsis aestivalis*	SGCN	
Spectacle case	*Cumberlandia monodonta*	SGCN	
Spike	*Elliptio dilatata*	SGCN	
Spotfin Shiner	*Cyprinella spiloptera*		
Spottail Shiner	*Notropis hudsonius*	SGCN	
Spotted Bass	*Micropterus punctulatus*		
Spotted Sucker	*Minytrema melanops*		

Common Name	Scientific Name	State Status	Federal Status
Starhead Topminnow	*Fundulus dispar*		
Stonecat	*Noturus flavus*		
Strange floater (Squawfoot)	*Strophitus undulatus*	SGCN	
Suckermouth Minnow	*Phenacobius mirabilis*		
Tadpole Madtom	*Noturus gyrinus*	SGCN	
Topeka Shiner	*Notropis topeka*	T, SGCN	E
Trout-Perch	*Percopsis omiscomaycus*	SGCN	
Walleye	*Sander vitreum*		
Warmouth	*Lepomis gulosus*		
Wartyback	*Quadrula nodulata*	SGCN	
Weed Shiner	*Notropis texanus*	E, SGCN	
Western Sand Darter	*Ammocrypta clara*	T, SGCN	
Western Silvery Minnow	*Hybognathus argyritis*	SGCN	
White Bass	*Morone chrysops*		
White Crappie	*Pomoxis annularis*		
White Sucker	*Catostomus commersoni*		
Yellow Bass	*Morone mississippiensis*		
Yellow Bullhead	*Ameiurus natalis*		
Yellow Perch	*Perca flavescens*		
Yellow Sandshell	*Lampsilis teres*	E, SGCN	
E = Endangered, T = Threatened, SGCN = Species of Greatest Conservation Need			

Reptiles and Amphibians

Common Name	Scientific Name	State Status
American Toad	*Bufo americanus*	
Blanding's Turtle	*Emydoidea blandingii*	T
Boreal Chorus Frog	*Pseudacris maculata*	*
Brown Snake	*Storeria dekayi*	P
Bullfrog	*Rana catesbeiana*	*
Bullsnake	*Pituophis catenifer sayi*	S
Cope's Gray Tree Frog	*Hyla chrysoscelis*	*
Crayfish Snake	*Regina grahamii*	P
Cricket Frog	*Acris crepitans*	*
Eastern Garter Snake	*Thamnophis sirtalis*	
Fox Snake	*Elaphe vulpina*	P
Green Frog	*Rana clamitans*	*
Lined Snake	*Tropidoclonion lineatum*	P
Milk Snake	*Lampropeltis triangulum*	P
Mudpuppy	*Necturus maculosus*	T
Northern Leopard Frog	*Rana pipiens*	*
Northern Prairie Skink	*Eumeces septentrionalis*	
Northern Water Snake	*Nerodia sipedon*	P
Ornate Box Turtle	*Terrapene ornata*	T
Painted Turtle	*Chrysemys picta*	*
Plains Garter Snake	*Thamnophis radix*	P
Plain's Leopard Frog	*Rana blairi*	*
Racer	*Coluber constrictor*	P
Redbelly Snake	*Storeria occipitomaculata*	P
Ringneck Snake	*Diadophis punctatus*	P
Smooth Earth Snake	*Virginia valeriae*	P
Smooth Green Snake	*Opheodrys vernalis*	S

Common Name	Scientific Name	State Status
Smooth Softshell Turtle	*Apalone mutica*	*
Snapping Turtle	*Chelydra serpentina*	*
Spiny Softshell Turtle	*Apalone spinifera*	*
Spring Peeper	*Pseudacris crucifer*	*
Tiger Salamander	*Ambystoma tigrinum*	*
Western Ribbon Snake	*Thamnophis proximus*	P
Wood Turtle	*Clemmys insculpta*	E

E = Endangered, P = Protected, cannot kill or collect in Iowa

S = Special Concern, T = Threatened

*A valid fishing license is required to possess this species for bait and/or food.

Appendix C: Abbreviations and Glossary

Abbreviations

The following is a quicklist of the most frequently used abbreviations in this document. More detail on some of them is in the Glossary that follows.

NOTE: "Abbreviations" is used generically to refer to abbreviations (shortened version of a term or series of words), acronyms (word formed from letters or parts of a series of words), and initialisms (initial letters pronounced separately).

BCA:	Bird Conservation Areas
BCC:	Birds of Conservation Concern
BCR:	Bird Conservation Region
CCP:	Comprehensive Conservation Plan (also plan)
CD:	Compatibility Determination
CFR:	Code of Federal Regulations
CRP:	U.S. Department of Agriculture's Conservation Reserve Program
DNR:	Department of Natural Resources (usually preceded by state abbreviation)
DOI:	U.S. Department of the Interior
DU:	Ducks Unlimited
EA:	Environmental Assessment
EAS:	Environmental Action Statement
EE:	Environmental Education
EIS:	Environmental Impact Statement
EO:	Executive Order
EPA:	U.S. Environmental Protection Agency
ESA:	Endangered Species Act
FONSI:	Finding of No Significant Impact
FR:	Federal Register
FTE:	Full-time equivalent
FWS:	U.S. Fish and Wildlife Service (also USFWS and Service)
FY:	Fiscal Year
GAP:	Gap Analysis Program
GIS:	Geographic Information System
HAPET:	U.S. Fish and Wildlife Service's Habitat and Population Evaluation Team
IBA:	Audubon Society's Important Bird Area
IPCC:	Intergovernmental Panel on Climate Change
LCC:	Landscape Conservation Cooperative
LCD:	Landscape Conservation Design
MOA:	Memorandum of Agreement
MOU:	Memorandum of Understanding
NABCI:	North American Bird Conservation Initiative
NAI:	Natural Areas Inventory
NEPA:	National Environmental Policy Act
NRHP:	National Register of Historic Places
NWR:	National Wildlife Refuge (also Refuge)
NWRS:	National Wildlife Refuge System (also Refuge System)
PFT:	Permanent full-time

PPJV: Prairie Pothole Joint Venture
PPR: Prairie Pothole Region
R3: Region 3 (Midwest) of the U.S. Fish and Wildlife Service (Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, Wisconsin)
ROD: Record of Decision
SGCN: Species of (in) Greatest Conservation Need
SHC: Strategic Habitat Conservation
TFT: Temporary full-time
UMR/GLR JV: Upper Mississippi River & Great Lakes Region Joint Venture
USC: United States Code
USDA: U.S. Department of Agriculture
USGS: U.S. Geological Survey
WMA: Wildlife Management Area (usually State owned)
WMD: Wetland Management District (also District)
WPA: Waterfowl Production Area
WRP: U.S. Department of Agriculture's Wetland Reserve Program
WSA: Wilderness Study Areas

Glossary

Adaptation: Adjustment in natural or human systems to a new or changing environment. Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation.

Adaptive Management: The rigorous application of management, research, and monitoring to gain information and experience necessary to assess and modify management activities. A process that uses feedback from refuge research and monitoring and evaluation of management actions to support or modify objectives and strategies at all planning levels (FWS, 602 FW 1.6(A)).

Alternatives: Different sets of objectives and strategies or means of achieving refuge purposes and goals, helping fulfill the National Wildlife Refuge System mission, and resolving issues (FWS, 602 FW 1.6(B)).

Appropriate Use: A proposed or existing use on a refuge that meets at least one of the following four conditions (FWS, 603 FW 1.6):

- The use is a wildlife-dependent recreational use as identified in the Fish and Wildlife Improvement Act of 1978.
- The use contributes to fulfilling the refuge purpose(s), the National Wildlife Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the National Wildlife Refuge System Improvement Act of 1997 was signed into law.
- The use involves the take of fish and wildlife under state regulations.
- The use has been found to be appropriate as specified in section 1.11.

Approved Acquisition Boundary: A project boundary that the Director of the U.S. Fish and Wildlife Service approves upon completion of the planning and environmental compliance process. An approved acquisition boundary only designates those lands that the Service has authority to acquire and/or manage through various agreements. Approval of an acquisition boundary does not grant the Service jurisdiction or control over lands within the boundary, and it does not make lands within the refuge boundary part of the National Wildlife Refuge System. Lands do not become part of the Refuge System until they are purchased or are placed under an agreement that provides for management as part of the Refuge System.

Biological Control: The use of organisms or viruses to control weeds or other pests.

Biological Diversity: The variety of life, including the variety of living organisms, the genetic differences among them, and the communities in which they occur (FWS, 602 FW 1.6(C)).

Biological Integrity: Biotic composition, structure, and functioning at the genetic, organism, and community levels consistent with natural conditions, including the natural biological processes that shape genomes, organisms, and communities (FWS, 602 FW 1.6(D)).

Candidate Species: Plants and animals for which the U.S. Fish and Wildlife Service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act of 1973, but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

Carbon Sequestration: The uptake and storage of carbon. Trees and plants, for example, absorb carbon dioxide, release the oxygen, and store the carbon. Fossil fuels were at one time biomass and continue to store the carbon until burned.

Climate Change: Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from (1) natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun; (2) natural processes within the climate system (e.g., changes in ocean circulation); (3) human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification, etc.).

Code of Federal Regulations (CFR): The codification of the general and permanent rules published in the *Federal Register* by the departments and agencies of the federal government. It is divided into 50 titles that represent broad areas subject to federal regulation. The 50 subject matter titles contain one or more individual volumes, which are updated once each calendar year, on a staggered basis.

Council on Environmental Quality (CEQ): An Executive Office of the President whose members are appointed by the President. CEQ recommends national policies to promote the improvement of the quality of the environment.

Compatible Use: A proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the national wildlife refuge (FWS, 603 FW 2.6(B)).

Compatibility Determination (CD): A written determination signed and dated by the refuge manager and the U.S. Fish and Wildlife Service regional chief signifying that a proposed or existing use of a national wildlife refuge is a compatible use or is not a compatible use. The director of the Service makes this delegation through the regional director (FWS, 603 FW 2.6(A)).

Comprehensive Conservation Plan (CCP): A document that describes the desired future conditions of a refuge or planning unit and provides long-range guidance and management direction to achieve the purposes of the refuge; helps fulfill the mission of the Refuge System; maintains and, where appropriate, restores the ecological integrity of each refuge and the National Wildlife Refuge System; helps achieve the goals of the National Wilderness Preservation System; and meets other mandates (FWS, 602 FW 1.6(E)).

Consumptive Use: Use of a refuge resource that removes the resource from the refuge (e.g., killing an animal to eat, catching and keeping fish, harvesting berries or plants, or removal of mineral or other specimens).

Cultural Resource Inventory: A professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined geographic area. Inventories may involve various levels, including background literature search, comprehensive field examination to identify all exposed physical manifestations of cultural resources, or sample inventory to project site distribution and density over a larger area. Evaluation of identified cultural resources to determine eligibility for the National Register of Historic Places follows the criteria found in 36 CFR 60.4.

Cultural Resources: "Those parts of the physical environment—natural and built—that have cultural value to some kind of sociocultural group . . . [and] those non-material human social institutions . . . ." Cultural resources include historic sites, archeological sites and associated artifacts, sacred sites, traditional cultural properties, cultural items (human remains, funerary objects, sacred objects, and objects of cultural patrimony), and buildings and structures.

Easement: A privilege or right that is held by one person or other entity in land owned by another.

Ecological Integrity: The integration of biological integrity, natural biological diversity, and environmental health; the replication of natural conditions (FWS, 602 FW 1.6(G)).

Ecosystem: A biological community together with its environment, functioning as a unit. For administrative purposes, 53 ecosystems covering the United States and its possessions have been designated. These ecosystems generally correspond with watershed boundaries, and their sizes and ecological complexity vary (FWS, 602 FW 1.6(H)).

Effects (Impacts): Effects include:

- Direct effects, which are caused by the action and occur at the same time and place.
- Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

- Cumulative effects, which result from past, present, and reasonably foreseeable future actions that, collectively, become significant over time.

Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial (40 CFR 1508.8).

Endangered Species: Any species of plant or animal defined through the Endangered Species Act of 1973 as being in danger of extinction throughout all or a significant portion of its range and published in the *Federal Register*.

Endangered Species Act (ESA): Through federal action and by encouraging the establishment of state programs, the Endangered Species Act of 1973 provided for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. The act authorizes the determination and listing of species as endangered and threatened; prohibits unauthorized taking, possession, sale, and transport of endangered species; provides authority to acquire land for the conservation of listed species, using land and water conservation funds; authorizes establishment of cooperative agreements and grants-in-aid to states that establish and maintain active and adequate programs for endangered and threatened wildlife and plants; authorizes the assessment of civil and criminal penalties for violating the act or regulations; and authorizes the payment of rewards to anyone furnishing information leading to arrest and conviction for any violation of the act or any regulation issued thereunder.

Section 7 of the Endangered Species Act of 1973 requires federal agencies to insure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat.

Environmental Action Statement (EAS): The decision document for an environmental assessment for the U.S. Fish and Wildlife Service. The EAS will consist of a one-page document indicating the proposal, the Service decision, references to supporting documents (if any), and a signature block. The purposes of the EAS are to establish a process for internal review of National Environmental Policy Act-related decision documents and to provide an appropriate administrative record of NEPA-related decisions at all management levels of the Service (FWS, 550 FW 3.3 (C)).

Environmental Analysis: The process associated with preparing documents such as environmental assessments and environmental impact statements and the decision whether to prepare an environmental impact statement. It is an analysis of alternative actions and their predictable short-term and long-term effects, which include physical, biological, economic, and social factors and their interactions.

Environmental Assessment (EA): A systematic analysis to determine if proposed actions would result in a significant effect on the quality of the environment.

Environmental Consequences: The scientific and analytic basis for the comparison of alternatives. The environmental impacts of the alternatives including the proposed action, any

adverse environmental effects that cannot be avoided should the proposal be implemented, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitments of resources that would be involved in the proposal should it be implemented (40 CFR 1502.16).

Environmental Health: Abiotic composition, structure, and functioning of the environment consistent with natural conditions, including the natural abiotic processes that shape the environment (FWS, 602 FW 1.6(I)).

Environmental Impact Statement (EIS): A detailed written statement, required by section 102(2)(C) of the National Environmental Policy Act, analyzing the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).

Environmental Justice: The fair treatment and meaningful involvement of all people in the development, implementation, and enforcement of environmental laws regardless of race, color, national origin, or income.

Extirpation: The local extinction of a species that is no longer found in a locality or country but exists elsewhere in the world.

Finding of No Significant Impact (FONSI): A document prepared in compliance with the National Environmental Policy Act and supported by an environmental assessment that briefly presents why a federal action will have no significant effects on the human environment and for which an Environmental Impact Statement will not be prepared (40 CFR 1508.13).

Global Warming: Global warming is an average increase in the temperature of the atmosphere near the Earth's surface and in the troposphere, which can contribute to changes in global climate patterns. Global warming can occur from a variety of causes, both natural and human induced. In common usage, "global warming" often refers to the warming that can occur as a result of increased emissions of greenhouse gases from human activities.

Goal: A descriptive, open-ended, and often broad statement of desired future conditions that conveys purposes but does not define measurable units (FWS, 602 FW 1.6(J)).

Greenhouse Gas (GHG): Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, but are not limited to, water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), ozone (O3), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6).

Habitat: The physical and biological resources required by an organism for its survival and reproduction; these requirements are species-specific. Food and cover are major components of habitat and must extend beyond the requirements of the individual to include a sufficient area capable of supporting a viable population.

Incompatible: Any use (recreational or nonrecreational) of a refuge that, in the sound professional judgment of the Director of the U.S. Fish and Wildlife Service, will materially

interfere with or detract from the fulfillment of the mission of the National Wildlife Refuge System or the purposes of the refuge. Incompatible uses are not allowed to occur on Service areas.

Indicator: In effects analysis, a way for measuring effects from management alternatives on a particular resource or issue.

Interjurisdictional Fish: Fish that occur in waters under the jurisdiction of one or more states, for which there is an interstate fishery management plan or which migrates between the waters under the jurisdiction of two or more states bordering on the Great Lakes.

Invasive Species: Invasive species are organisms that are introduced into a non-native ecosystem and that cause, or are likely to cause, harm to the economy, environment, or human health.

Inventory: Accepted biological methods to determine the presence, relative abundance, and/or distribution of species (FWS, 701 FW 2.6(A)).

Issue: Any unsettled matter that requires a management decision—that is, a U.S. Fish and Wildlife Service initiative, opportunity, resource management problem, a threat to the resources of the unit, conflict in uses, public concern, or the presence of an undesirable resource condition (FWS, 602 FW 1.6(K)).

Landscape Conservation Cooperative: A national network of public-private partnerships that provide shared science to ensure the sustainability of America's land, water, wildlife, and cultural resources.

Landscape Conservation Design: A partnership-driven activity that results in an assessment of current and anticipated future resource patterns and processes, and a spatially explicit depiction of a desired future condition. These products guide partners' identification of broad management, restoration, and protection strategies that could be implemented on the ground to address identified resource concerns, attain desired future conditions, sustain ecosystem function, and achieve the missions, mandates, and goals of partner agencies, organizations, and tribes.

Major Federal Action: Includes action with effects that may be major and that are potentially subject to federal control and responsibility. "Major" reinforces but does not have a meaning independent of significantly. "Actions" include new and continuing activities. Federal actions include adoption of official policy, formal plans, programs, and approval of specific projects (40 CFR 1508.18).

Memorandum of Understanding or Agreement (MOU or MOA): A legal document outlining the terms and details of an agreement between parties (often U.S. Fish and Wildlife Service and a state natural resource agency), including each party's requirements and responsibilities. It sets forth the basic principles and guidelines under which the parties will work together to accomplish their goals. A memorandum of understanding or agreement are generally recognized as binding, even if no legal claim could be based on the rights and obligations laid down in them.

Migratory Birds: Birds that follow a seasonal movement from their breeding grounds to their wintering grounds. Waterfowl, shorebirds, raptors, and songbirds are all migratory birds.

Monitoring: Accepted biological methods to determine the status and/or demographics of species over time (FWS, 701 FW 2.6(B)).

National Environmental Policy Act (NEPA): This act, promulgated in 1969, requires all federal agencies to disclose the environmental effects of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements and must prepare appropriate NEPA documents to facilitate better environmental decision making (40 CFR 1500). The law also established the Council on Environmental Quality to implement the law and to monitor compliance with the law.

National Wilderness Preservation System: A network of federally owned areas designated by Congress as wilderness and managed by one of four federal agencies: the U.S. Fish and Wildlife Service, Bureau of Land Management, National Park Service, or the U.S. Forest Service. Includes over 600 areas and more than 105 million acres. The National Wildlife Refuge System includes over 20 million acres of wilderness in more than 60 refuges (FWS, 610 FW 1.9).

National Wildlife Refuge (NWR, Refuge): A designated area of land, water, or an interest in land or water within the National Wildlife Refuge System, but does not include Coordination Areas. A complete listing of all units of the Refuge System is located in the current Report of Lands Under Control of the U.S. Fish and Wildlife Service (FWS, 602 FW 1.6(L)).

National Wildlife Refuge System (NWRS, Refuge System): All lands, waters, and interests therein administered by the U.S. Fish and Wildlife Service as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas for the protection and conservation of fish, wildlife, and plant resources.

National Wildlife Refuge System Improvement Act of 1997 (improvement act): Sets the mission and administrative policy for all refuges in the National Wildlife Refuge System. Clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); establishes a formal process for determining compatibility; establishes the responsibilities of the Secretary of the Interior for managing and protecting the Refuge System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012. This act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

Native Species: A species, subspecies, or distinct population that occurs within its natural range or natural zone of potential dispersal (i.e., the geographic area the species occupies naturally or would occupy in the absence of direct or indirect human activity or an environmental catastrophe).

No Action Alternative: In the context of a Comprehensive Conservation Plan, this refers to the current management direction. With this alternative, no change from the current CCP would be implemented.

Non-consumptive Uses: Recreational activities (e.g., hiking, photography, and wildlife observation) that do not involve the taking or catching of fish, wildlife, or other natural resources.

Non-native Species: A species, subspecies, or distinct population that has been introduced by humans (intentionally or unintentionally) outside its natural range or natural zone of potential dispersal.

Objective: A concise statement of what we want to achieve, how much we want to achieve, when and where we want to achieve it, and who is responsible for the work. Objectives derive from goals and provide the basis for determining strategies, monitoring refuge accomplishments, and evaluating the success of strategies. Objectives are to be attainable, time-specific, and measurable (FWS, 602 FW 1.6(N)).

Ozone (O3): Ozone, the triatomic form of oxygen (O3), is a gaseous atmospheric constituent. In the troposphere, it is created both naturally and by photochemical reactions involving gases resulting from human activities (photochemical smog). In high concentrations, tropospheric ozone can be harmful to a wide range of living organisms. Tropospheric ozone acts as a greenhouse gas. In the stratosphere, ozone is created by the interaction between solar ultraviolet radiation and molecular oxygen (O2). Stratospheric ozone plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric ozone, due to chemical reactions that may be enhanced by climate change, results in an increased ground-level flux of ultraviolet (UV) B radiation.

Planning Area: The area upon which the planning effort will focus. A planning area may include lands outside existing planning unit boundaries currently studied for inclusion in the National Wildlife Refuge System and/or partnership planning efforts. It also may include watersheds or ecosystems outside of our jurisdiction that affect the planning unit. At a minimum, the planning area includes all lands within the authorized boundary of the refuge (FWS, 602 FW 1.6(O)).

Planning Team: A planning team is interdisciplinary in membership and function. A team generally consist of a planning team leader, refuge manager, staff biologists, a state natural resource agency representative, and other appropriate program specialists (e.g., social scientist, ecologist, recreation specialist). Other federal and tribal natural resource agencies may also be asked to provide team members, as appropriate. The planning team prepares the Comprehensive Conservation Plan and appropriate National Environmental Policy Act documentation (FWS, 602 FW 1.6(P)).

Prescribed Burning: Controlled application of fire to the landscape that allows the fire to be confined to a predetermined area while producing the intensity of heat and rate of spread required to achieve planned management objectives.

Preferred Alternative: A proposed action in the National Environmental Policy Act document for the Comprehensive Conservation Plan identifying the alternative that the U.S. Fish and Wildlife Service believes best achieves planning unit purposes, vision, and goals; helps fulfill the National Wildlife Refuge System mission; maintains and, where appropriate, restores the ecological integrity of each refuge and the Refuge System; addresses the significant issues and mandates; and is consistent with principles of sound fish and wildlife management.

Priority Public Uses: Six uses authorized by the National Wildlife Refuge System Improvement Act of 1997 to have priority and are found to be compatible with the refuge purposes. This includes hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

Proposed Action: In the context of a Comprehensive Conservation Plan, this is the same as the Preferred Alternative.

Public Involvement: A process that offers affected and interested individuals and organizations opportunities to become informed about, and to express their opinions on, U.S. Fish and Wildlife Service actions and policies. In the process, these public views are studied thoroughly and are thoughtfully considered in shaping decisions for refuge management.

Purposes of the Refuge: The purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge subunit. For refuges that encompass congressionally designated wilderness, the purposes of the Wilderness Act are additional purposes of the refuge (FWS, 602 FW 1.6(S)).

Record of Decision (ROD): A concise public record of a decision prepared by the federal agency, pursuant to National Environmental Policy Act, that contains a statement of the decision, identification of all alternatives considered, identification of the environmentally preferable alternative, a statement whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not), and a summary of monitoring and enforcement where applicable for any mitigation (40 CFR 1505.2).

Resident Species: A nonmigratory species inhabiting a given locality throughout the year. Examples include white-tailed deer, muskrat, raccoon, mink, and fox.

Scoping: A process for determining the scope of issues to be addressed by a Comprehensive Conservation Plan and for identifying the significant issues. Involved in the scoping process are federal, state, and local agencies; private organizations; and individuals.

Shorebird: Long-legged birds, also known as waders, belonging to the order Charadriiformes that use shallow wetlands and mud flats for foraging and nesting.

Significant Issue: A significant issue is typically: within Service jurisdiction, suggests different actions or alternatives, and will influence the decision (FWS, 602 FW 3.4 (3)(b)).

Species: A distinctive kind of plant or animal having distinguishable characteristics, and that can interbreed and produce young. A category of biological classification.

Sound Professional Judgment: A finding, determination, or decision that is consistent with principles of sound fish and wildlife management and administration, available science and resources, and adherence to the requirements of the National Wildlife Refuge System Administration Act of 1966 and other applicable laws.

Stakeholder: A person or group who has an interest in activities within the Planning Area.

Step-down Management Plan: A plan that provides specific guidance on management subjects (e.g., habitat, public use, fire, safety) or groups of related subjects. It describes strategies and implementation schedules for meeting Comprehensive Conservation Plan goals and objectives (FWS, 602 FW 1.6(U)).

Strategic Habitat Conservation (SHC): A structured, science-driven approach for making efficient, transparent decisions about where and how to expend Service resources for species, or groups of species, that are limited by the amount or quality of habitat. It is an adaptive management framework integrating planning, design, delivery, and evaluation.

Strategy: A specific action, tool or technique, or combination of actions, tools, and techniques used to meet unit objectives (FWS, 602 FW 1.6(V)).

Surrogate Species: Species that are used to represent other species or aspects of the environment.

Threatened Species: Those plant or animal species likely to become endangered species throughout all of or a significant portion of their range within the foreseeable future. A plant or animal identified and defined in accordance with the Endangered Species Act of 1973 and published in the *Federal Register*.

Vision Statement: A concise statement of what the planning unit should be or hope to do, based primarily upon the National Wildlife Refuge System mission, specific refuge purposes, and other mandates. The vision statement for the refuge should be tied to the mission of the Refuge System; the purpose(s) of the refuge; the maintenance or restoration of the ecological integrity of each refuge and the Refuge System; and other mandates (FWS, 602 FW 1.6(Z)).

Waterfowl: A group of birds that include ducks, geese, and swans (belonging to the order Anseriformes).

Waterfowl Production Area (WPA): Prairie wetlands with associated uplands managed to provide nesting areas for waterfowl and owned in fee title by the U.S. Fish and Wildlife Service. These lands are purchased from willing sellers with funds from federal Duck Stamp sales. They are open to public hunting, fishing, and trapping according to state and federal regulations.

Watershed: The entire land area that collects and drains water into a river/stream or river/stream system.

Wetland: A wetland is land transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For the purposes of this classification a wetland must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year (Cowardin et al. 1979).

Wetland Management District (WMD): An area covering several counties that acquires (with federal Duck Stamp funds), restores, and manages prairie wetland habitat critical to waterfowl and other wetland birds.

Wildlife-Dependent Recreational Use: A use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation. These are the six priority public uses of the National Wildlife Refuge System as established in the National Wildlife Refuge System Administration Act of 1966, as amended. Wildlife-dependent recreational uses, other than the six priority public uses, are those that depend on the presence of wildlife. These

other uses will also be considered in the preparation of refuge Comprehensive Conservation Plans; however, the six priority public uses always will take precedence (FWS, 602 FW 1.6(Y)).

Wildlife Diversity: A measure of the number of wildlife species in an area and their relative abundance.

Water Birds: This general category includes all birds that inhabit lakes, marshes, streams and other wetlands at some point during the year. The group includes all waterfowl such as ducks, geese, and swans and other birds such as loons, rails, cranes, herons, egrets, ibis, cormorants, pelicans, shorebirds, and passerines that nest and rely on wetland vegetation.

Appendix D: Legal and Policy Guidance

Administrative Procedures Act of 1946
Outlines administrative procedures to be followed by federal agencies with respect to identification of information to be made public; publication of material in the *Federal Register*; maintenance of records; attendance and notification requirements for specific meetings and hearings; issuance of licenses; and review of agency actions.

American Indian Religious Freedom Act of 1978
Establishes as policy of the United States the protection and preservation for American Indians of their inherent right to freedom to believe, express, and practice their traditional religions. The act directs federal agencies to evaluate their policies and procedures, in consultation with native traditional religious leaders, in order to determine changes required to protect and preserve Native American religious cultural rights and practices.

Americans with Disabilities Act of 1990, as amended by the ADA Amendments Act of 2008
Prohibits discrimination of individuals based on disability. It requires that public transportation services be accessible to individuals with disabilities and prohibits discrimination in employment of qualified individuals with disabilities. It requires the Equal Employment Opportunity Commission to issue regulations relating to discrimination of disabled individuals, and requires the National Council on Disability to conduct a study of areas designated as wilderness to determine the effect of the designation on the ability of individuals to enjoy such areas. The ADA Amendments Act of 2008 restored the intent and protections of the original act.

Antiquities Act of 1906
Authorizes the President to designate as National Monuments objects or areas of historic or scientific interest on lands owned or controlled by the United States. The act requires that a permit be obtained for examination of ruins, excavation of archaeological sites, and the gathering of objects of antiquity on lands under the jurisdiction of the Secretaries of Interior, Agriculture, and Army; and provides penalties for violations.

Archaeological Resources Protection Act of 1979
Largely supplanted the resource protection provisions of the Antiquities Act for archaeological items. This act established detailed requirements for issuance of permits for any excavation for or removal of archaeological resources from federal or Indian lands. It also established civil and criminal penalties for the unauthorized excavation, removal, or damage of any such resources; for any trafficking in such resources removed from federal or Indian land in violation of any provision of federal law; and for interstate and foreign commerce in such resources acquired, transported or received in violation of any state or local law. This act also required the land managing agencies to establish public awareness programs regarding the value of archaeological resources to the Nation.

Archeological and Historic Preservation Act of 1960, as amended
This act carries out the policy established by the Historic Sites, Buildings and Antiquities Act of 1935 (known as the Historic Sites Act). It directs federal agencies to notify the Secretary of the Interior whenever they find a federal or federally assisted, licensed, or permitted project may cause loss or destruction of significant scientific, prehistoric, or archaeological data. The act authorizes use of appropriated, donated, and/or transferred funds for the recovery, protection, and preservation of such data.

Archeological and Historic Preservation Act of 1974
Directs the preservation of historic and archaeological data in federal construction projects.

Architectural Barriers Act of 1969
Ensures that certain buildings financed or leased by federal agencies are constructed (or renovated) so that they will be accessible to the physically handicapped.

Bald and Golden Eagle Protection Act of 1940, as amended
Prohibits the possession, sale, or transport of any bald or golden eagle, alive or dead, or part, nest, or egg except as permitted by the Secretary of the Interior for scientific or exhibition purposes or for the religious purposes of Indians.

Bankhead-Jones Farm Tenant Act of 1937
Directs the Secretary of Agriculture to develop a program of land conservation and utilization in order to correct maladjustments in land use and thus assist in such things as control of soil erosion, reforestation, preservation of natural resources, and protection of fish and wildlife. Some early refuges and hatcheries were established under authority of this act.

Clean Air Act of 1970
Regulates air emissions from area, stationary, and mobile sources. The act and its amendments charge federal land managers with direct responsibility to protect the “air quality and related values” of land under their control. These values include fish, wildlife, and their habitats.

Emergency Wetlands Resources Act of 1986
Authorized the purchase of wetlands from Land and Water Conservation Fund moneys, removing a prior prohibition on such acquisitions. Requires the Secretary of the Interior to establish a National Wetlands Priority Conservation Plan, requires the states to include wetlands in their comprehensive outdoor recreation plans, and transfers to the Migratory Bird Conservation Fund amounts equal to import duties on arms and ammunition. It established entrance fees at national wildlife refuges. It also extended the Wetlands Loan Act authorization through 1988 and required the Secretary to report to Congress on wetlands loss.
In addition, it directed the Secretary, through the U.S. Fish and Wildlife Service, to continue the National Wetlands Inventory; to complete mapping of the contiguous United States; and to produce at ten-year intervals reports to update and improve in the September 1982 "Status and Trends of Wetlands and Deepwater Habitat in the Coterminous United States, 1950s to 1970s." This act also increased the price of Duck Stamps.

Endangered Species Act of 1973, as amended
Directs federal agencies to take actions that would further the purposes of the act and to ensure that actions they carry out, authorize, or fund do not jeopardize endangered species or their critical habitat. The act also provides authority for land acquisition. Conservation of threatened and endangered species has become a major objective of both land acquisition and refuge management programs.

Endangered Species Conservation Act of 1969
This act expanded the provisions of the Endangered Species Preservation Act of 1966 to include the listing of species in danger world-wide and added mollusks and crustaceans to the animals that could be listed.

Endangered Species Preservation Act of 1966
This act was the predecessor to the Endangered Species Act of 1973 and directed the Secretary of the Interior to produce a list of native U.S. vertebrate species in danger of extinction for the limited protection of those animals.

Environmental Education Act of 1990
Established the Office of Environmental Education within the Environmental Protection Agency to develop and administer a federal environmental education program in consultation with other federal natural resource management agencies, including the U.S. Fish and Wildlife Service.

Executive Order 11593: Protection and Enhancement of the Cultural Environment (1971)
States that if the U.S. Fish and Wildlife Service proposes any development activities that may affect the archaeological or historic sites, the Service will consult with federal and state Historic Preservation Officers to comply with section 106 of the National Historic Preservation Act of 1966, as amended.

Executive Order 11644: Use of Off-road Vehicles on the Public Lands (1972)
Established policies and procedures to ensure that the use of off-road vehicles on public lands will be controlled and directed to protect the resources of those lands, to promote the safety of all users of those lands, and minimize conflicts among the various uses of those lands. EO 11989 (1977) amends section 2 of EO 11644 and directs agencies to close areas negatively impacted by off-road vehicles.

Executive Order 11988: Floodplain Management (1977)
Prevents federal agencies from contributing to the "adverse impacts associated with occupancy and modification of floodplains" and the "direct or indirect support of floodplain development." In the course of fulfilling their respective authorities, federal agencies "shall take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains.

Executive Order 11990: Protection of Wetlands (1977)
Directs federal agencies to: (1) minimize destruction, loss, or degradation of wetlands; and (2) preserve and enhance the natural and beneficial values of wetlands when a practical alternative exists.

Executive Order 12372: Intergovernmental Review of Federal Programs (1982)
Seeks to foster intergovernmental partnerships by requiring federal agencies to use the state process to determine and address concerns of state and local elected officials with proposed federal assistance and development programs.

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1994)
Mandates that each federal agency shall make achieving environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. This order also creates an Interagency Working Group on Environmental Justice to provide guidance to federal agencies in overcoming these issues.

Executive Order 12906: Coordinating Geographical Data Acquisition and Access: The National Spatial Data Infrastructure (1994), as amended by Executive Order 13286: Amendment of Executive Orders, and Other Actions, in Connection With the Transfer of Certain Functions to the Secretary of Homeland Security (2003)
Recommended that the executive branch develop, in cooperation with state, local, and tribal governments, and the private sector, a coordinated National Spatial Data Infrastructure to support public and private sector applications of geospatial data. Of particular importance to Comprehensive Conservation Plans is the National Vegetation Classification System (NVCS), which is the adopted standard for vegetation mapping. Using NVCS facilitates the compilation of regional and national summaries, which, in turn, can provide an ecosystem context for individual refuges.

Executive Order 12962: Recreational Fisheries (1995)
Directs federal agencies to improve the quantity, function, sustainable productivity, and distribution of United States aquatic resources for increased recreational fishing opportunities in cooperation with states and tribes.

Executive Order 12996: Management and General Public Use of the National Wildlife Refuge System (1996)
Defines a conservation mission for the National Wildlife Refuge System, six compatible wildlife-dependent recreational activities, and four guiding principles for management of the Refuge System. Directs the Secretary of the Interior to undertake several actions in support of management and public use and to ensure the maintenance of the biological integrity and environmental health of the Refuge System. It also provides for the identification of existing wildlife-dependent uses that will continue to occur as lands are added to the Refuge System.

Executive Order 13007: Indian Sacred Sites (1996)
Directs federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

Executive Order 13061: Federal Support of Community Efforts Along American Heritage Rivers (1997)
Established the American Heritage Rivers initiative for the purpose of natural resource and environmental protection, economic revitalization, and historic and cultural preservation. The act directs federal agencies to preserve, protect, and restore rivers and their associated resources important to our history, culture, and natural heritage.

Executive Order 13084: Consultation and Coordination With Indian Tribal Governments (2000)
Provides a mechanism for establishing regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications.

Executive Order 13112: Invasive Species (1999)
Directs federal agencies to prevent the introduction of invasive species, detect and respond rapidly to and control populations of such species in a cost effective and environmentally sound manner, accurately monitor invasive species, provide for restoration of native species and habitat conditions, conduct research to prevent introductions, to control invasive species, and to promote public education on invasive species and the means to address them. This EO replaces and rescinds EO 11987: Exotic Organisms (1977).

Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds (2001)
Instructs federal agencies to conserve migratory birds by several means, including the incorporation of strategies and recommendations found in Partners in Flight Bird Conservation plans, the North American Waterfowl Plan, the North American Waterbird Conservation Plan, and the United States Shorebird Conservation Plan, into agency management plans and guidance documents.

Executive Order 13443: Facilitation of Hunting Heritage and Wildlife Conservation (2007)
Directs federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.

Farmland Protection Policy Act of 1981, as amended
Minimizes the extent to which federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. Federal programs include construction projects and the management of federal lands.

Federal Advisory Committee Act of 1972, as amended
Governs the establishment of and procedures for committees that provide advice to the federal government. Advisory committees may be established only if they will serve a necessary, nonduplicative function. Committees must be strictly advisory unless otherwise specified and meetings must be open to the public.

Federal-Aid Highways Act of 1968
Establishes requirements for approval of federal highways through wildlife refuges and other designated areas to preserve the natural beauty of such areas. The Secretary of Transportation is directed to consult with the Secretary of the Interior and other federal agencies before approving any program or project requiring the use of land under their jurisdiction.

Federal Aid in Sport Fish Restoration Act (Dingell-Johnson Act) of 1950
Authorizes the Secretary of the Interior to provide financial assistance for state fish restoration and management plans and projects. It is financed by excise taxes paid by manufacturers of rods, reels, and other fishing tackle.

Federal Aid in Wildlife Restoration Act (Pittman-Robertson Act) of 1937
Taxes the purchase of ammunition and firearms and earmarks the proceeds to be distributed to the states for wildlife restoration.

Federal Cave Resources Protection Act of 1988
Established requirements for the management and protection of caves and their resources on federal lands, including allowing the land managing agencies to withhold the location of caves from the public and requiring permits for any removal or collecting activities in caves on federal lands.

Federal Lands Recreation Enhancement Act (REA) of 2004
Allows the government to charge a fee for recreational use of public lands managed by the U.S. Fish and Wildlife Service and other agencies. The recreation fee program is a program by which fees paid by visitors to certain federal recreation sites are retained by the collecting site and used to improve the quality of the visitor experiences at those sites.

Federal Noxious Weed Act of 1975, as amended
The Secretary of Agriculture was given the authority to designate plants as noxious weeds and to cooperate with other federal, state, and local agencies; farmers associations, and private individuals in measures to control, eradicate, prevent, or retard the spread of such weeds. The act requires each federal land-managing agency, including the U.S. Fish and Wildlife Service, to designate an office or person to coordinate a program to control such plants on the agency's land and implement cooperative agreements with the states, including integrated management systems to control undesirable plants.

Federal Records Act of 1950
Directs the preservation of evidence of the government's organization, functions, policies, decisions, operations, and activities, as well as basic historical and other information.

Federal Water Pollution Control Act of 1948, as frequently amended particularly by the Clean Water Act of 1977
This act and its amendments have as their objectives the restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters and, therefore, regulates the discharge of pollutants into waters of the United States. The act protects fish and wildlife, establishes operation permits for all major sources of water pollution, limits the discharge of pollutants or toxins into water, and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit is obtained under the Clean Water Act. Section 404 charges the U.S. Army Corps of Engineers with regulating discharge of dredge or fill materials into waters of the United States, including wetlands. The "Clean Water Act" became the common name with amendments in 1977.

Federal Water Project Recreation Act of 1965, as amended
Declares the intent of Congress that recreation and fish and wildlife enhancement be given full consideration as purposes of federal water development projects. The act also authorizes the use of federal water project funds for land acquisition in order to establish refuges for migratory waterfowl when recommended by the Secretary of the Interior, and authorizes the Secretary to provide facilities for outdoor recreation and fish and wildlife at all reservoirs under his control, except those within national wildlife refuges.

Fish and Wildlife Act of 1956, as frequently amended
Establishes a comprehensive national fish, shellfish, and wildlife resources policy with emphasis on the commercial fishing industry but also with a direction to administer the act with regard to the inherent right of every citizen and resident to fish for pleasure, enjoyment, and betterment and to maintain and increase public opportunities for recreational use of fish and wildlife resources. The 1998 amendments to the act modified the powers of the Secretary of the Interior in regard to volunteer service, community partnerships, and education programs.

Fish and Wildlife Conservation Act of 1980, as amended
Requires the Service to monitor non-gamebird species, identify species of management concern, and implement conservation measures to preclude the need for listing under the Endangered Species Act.

Fish and Wildlife Coordination Act of 1934
Promotes equal consideration and coordination of wildlife conservation with other water resource development programs by requiring consultation with the U.S. Fish and Wildlife Service and the state fish and wildlife agencies where the "waters of a stream or other body of

water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified" by any agency under federal permit or license. This act also authorized use of surplus federal property for wildlife conservation purposes and authorized the Secretary of the Interior to provide public fishing areas and accept donations of lands and funds.

Fish and Wildlife Improvement Act of 1978
Improves the administration of fish and wildlife programs and amends several earlier laws including the Refuge Recreation Act, the National Wildlife Refuge System Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary of the Interior to accept gifts and bequests of real and personal property on behalf of the United States. It also authorizes the use of volunteers on Service projects and appropriations to carry out a volunteer program.

Food Security Act of 1985 (Farm Bill), as amended
Known as the Farm Bill, this act contains several provisions that contribute to wetland conservation. The Swampbuster provisions state that farmers who convert wetlands for the purpose of planting after enactment of the law are ineligible for most farm program subsidies. The act also established the Wetlands Reserve Program to restore and protect wetlands through easements and restoration of the functions and values of wetlands on such easement areas.

Freedom of Information Act of 1966
Requires all federal agencies to make available to the public for inspection and copying administrative staff manuals and staff instructions; official, published and unpublished policy statements; final orders deciding case adjudication; and other documents. Special exemptions have been reserved for nine categories of privileged material. The act requires the party seeking the information to pay reasonable search and duplication costs.

Geothermal Steam Act of 1970, as amended
Authorizes and governs the lease of geothermal steam and related resources on public lands. Section 15(c) of the act prohibits issuing geothermal leases on virtually all U.S. Fish and Wildlife Service-administered lands.

Historic Sites, Buildings and Antiquities Act of 1935
Popularly known as the Historic Sites Act, as amended in 1965, declared it a national policy to preserve historic sites and objects of national significance, including those located on refuges. It provided procedures for designation, acquisition, administration, and protection of such sites. Among other things, National Historic and Natural Landmarks are designated under authority of this act.

Lacey Act of 1900, as amended
Originally designed to help states protect their native game animals and to safeguard U.S. crop production from harmful foreign species. The act prohibits interstate and international transport and commerce of fish, wildlife, or plants taken in violation of domestic or foreign laws. It regulates the introduction to the United States of foreign species into new locations.

Land and Water Conservation Fund Act of 1965
Provides funding through receipts from the sale of surplus federal land, appropriations from oil and gas receipts from the outer continental shelf, and other sources for land acquisition under several authorities. Appropriations from the fund may be used for matching grants to states for outdoor recreation projects and for land acquisition by various federal agencies including the Fish and Wildlife Service.

Migratory Bird Conservation Act of 1929
Establishes a Migratory Bird Conservation Commission to approve areas recommended by the Secretary of the Interior for acquisition with Migratory Bird Conservation Funds. Authorizes the Secretary of the Interior to cooperate with local authorities in wildlife conservation and to conduct investigations, to publish documents related to North American birds, and to maintain and develop refuges. The act provides for cooperation with states in enforcement. It establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Commission for migratory birds. This act includes acquisition authority for purchase or rental of a partial interest in land or waters and requires the Secretary of the Interior to consult with the appropriate units of local government and with the governor of the state concerned, or the appropriate state agency, before recommending an area for purchase or rental. This provision was subsequently amended in 1983, 1984, and 1986 to require that either the governor or the state agency approve each proposed acquisition. The role of the Commission was expanded by the North American Wetland Conservation Act to include approving wetlands acquisition, restoration, and enhancement proposals recommended by the North American Wetlands Conservation Council.

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp Act) of 1934
Known as the Duck Stamp Act, this act requires every waterfowl hunter 16 years of age or older to carry a stamp, and earmarks proceeds of Duck Stamps to buy or lease waterfowl habitat. A 1958 amendment authorizes the acquisition of small wetland and pothole areas to be designated as “Waterfowl Production Areas,” which may be acquired without the limitations and requirements of the Migratory Bird Conservation Act.

Migratory Bird Treaty Act of 1918
Implements various treaties and conventions between the United States and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Except as allowed by special regulations, the act makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, barter, export, or import any migratory bird, part, nest, egg, or product.

Mineral Leasing Act for Acquired Lands of 1947, as amended
Authorizes and governs mineral leasing on acquired public lands.

Minerals Leasing Act of 1920, as amended
Authorizes and governs leasing of public lands for development of deposits of coal, oil, gas, and other hydrocarbons, sulphur, phosphate, potassium, and sodium. Section 185 of this act contains provisions relating to granting rights-of-way over federal lands for pipelines.

Mining Act of 1872, as amended
Authorizes and governs prospecting and mining for the so-called “hardrock” minerals (such as gold and silver) on public lands.

National and Community Service Act of 1990
Authorizes several programs to engage citizens of the United States in full and/or part-time projects designed to combat illiteracy and poverty, provide job skills, enhance educational skills, and fulfill environmental needs. Among other things, this law established the American Conservation and Youth Service Corps to engage young adults in approved human and natural resource projects, which will benefit the public or are carried out on federal or tribal lands.

National Environmental Policy Act of 1969 (NEPA), as amended
This act and the implementing regulations developed by the Council on Environmental Quality (40 CFR 1500–1508) require federal agencies to integrate the National Environmental Policy Act (NEPA) process with other planning at the earliest possible time to provide a systematic interdisciplinary approach to decision making; to identify and analyze the environmental effects of their actions; to describe appropriate alternatives to the proposed actions; and to involve the affected state and federal agencies, tribal governments, and public in the planning and decision making process. This act requires the disclosure of the environmental impacts of any major federal action significantly affecting the quality of the human environment.

National Historic Preservation Act of 1966
Repeatedly amended, the act provides for preservation of significant historical features (buildings, objects, and sites) through a grant-in-aid program to the states. It established a National Register of Historic Places and a program of matching grants under the existing National Trust for Historic Preservation (16 U.S.C. 468–468d). The act established an Advisory Council on Historic Preservation, which was made a permanent independent agency in 1976 (90 Stat. 1319). That act also created the Historic Preservation Fund. Federal agencies are directed to take into account the effects of their actions on items or sites listed or eligible for listing in the National Register and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. Section 110 requires federal agencies to manage historic properties, e.g., to document historic properties prior to destruction or damage; section 101 requires federal agencies consider Indian tribal values in historic preservation programs and requires each federal agency to establish a program leading to inventory of all historic properties on its land.

National Trails System Act of 1968
Established the National Trails System to protect the recreational, scenic, and historic values of some important trails. National Recreation Trails may be established by the Secretaries of the Interior or Agriculture on land wholly or partly within their jurisdiction, with the consent of the involved state(s) and other land managing agencies, if any. National scenic and national historic trails may only be designated by an act of Congress. Several national trails cross units of the National Wildlife Refuge System.

National Wildlife Refuge System Administration Act of 1966 (amended by the National Wildlife Refuge System Improvement Act of 1997)
This act consolidates the authorities relating to the various categories of lands for the conservation of fish and wildlife administered by the Secretary of the Interior through the U.S Fish and Wildlife Service by designating all such areas part of a single National Wildlife Refuge System. Areas include wildlife refuges, areas for the protection and conservation of fish and wildlife threatened with extinction, wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas. The law also prohibits knowingly disturbing any area within the system or the take of Refuge System wildlife without a permit. The act addresses the growing need for recreational opportunities by providing a decision framework for allowing appropriate and compatible uses of the Refuge System.

National Wildlife Refuge System Centennial Act of 2000
Establishes a commission to promote awareness by the public to develop a long-term plan to meet priority needs of the National Wildlife Refuge System, require an annual report on the needs, and improve public use programs and facilities.

National Wildlife Refuge System Improvement Act of 1997
This act, which amends the National Wildlife Refuge System Administration Act of 1966, serves as the "organic act" for the National Wildlife Refuge System. The act states first and foremost that the mission of the National Wildlife Refuge System is focused singularly on wildlife conservation. It establishes a unifying mission for the Refuge System, reinforces the importance of refuge purposes to guide management direction, articulates a process for determining compatible uses of refuges, identifies six priority wildlife-dependent recreation uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation), and adds a requirement for preparing comprehensive conservation plans through a public planning process. The act requires the Secretary of the Interior to maintain the biological integrity, diversity, and environmental health of the Refuge System.

National Wildlife Refuge System Volunteer and Community Partnership Enhancement Act of 1998
Amends the Fish and Wildlife Act of 1956 to encourage the use of volunteers to help in the management of refuges within the National Wildlife Refuge System; facilitates partnerships between the Refuge System and nonfederal entities to promote public awareness of the resources of the Refuge System and public participation in the conservation of the resources; and encourages donations and other contributions.

National Wildlife Refuge Volunteer Improvement Act of 2010
Maintains the current funding authorization level for the U.S. Fish and Wildlife Service's volunteer and community partnerships programs that are vital to national wildlife refuges but makes a number of important amendments. The law amends the National Wildlife Refuge Volunteer and Community Partnership Enhancement Act of 1998 to direct the Service to carry out a National Volunteer Coordination Program within the National Wildlife Refuge System. It also requires the Director of the Service to publish a national strategy for the coordination and utilization of volunteers within the Refuge System and provide at least one regional volunteer coordinator for each Service region to implement the strategy.

Native American Graves Protection and Repatriation Act (NAGPRA) of 1990
Requires federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession. This act imposes serious delays on a project when human remains or other cultural items are encountered in the absence of a plan.

Neotropical Migratory Bird Conservation Act of 2000
Establishes a matching grants program to fund projects that promote the conservation of neotropical migratory birds in the United States, Latin America, and the Caribbean.

North American Wetlands Conservation Act of 1989
Provides funding and administrative direction for implementation of the North American Waterfowl Management Plan and the Tripartite Agreement on wetlands between the United States, Canada, and Mexico. North American Wetlands Conservation Council is created to recommend projects to be funded under the act to the Migratory Bird Conservation Commission. Available funds may be expended for up to 50 percent of the United States' share cost of wetlands conservation projects in Canada, Mexico, or the United States (or 100 percent of the cost of projects on federal lands).

Partnerships for Wildlife Act of 1992
Established a Wildlife Conservation and Appreciation Fund to receive appropriated funds and donations from the National Fish and Wildlife Foundation and other private sources to assist the

state fish and game agencies in carrying out their responsibilities for conservation of non-game species. The funding formula is no more than 1/3 federal funds, at least 1/3 foundation funds, and at least 1/3 state funds.

Refuge Recreation Act of 1962, as amended
Requires that any recreational use on areas of the National Wildlife Refuge System be "compatible" with the primary purpose(s) for which the area was acquired or established. This act also requires that sufficient funding be available for the development, operation and maintenance of recreational uses that are not directly related to the area's primary purpose(s).

Refuge Revenue Sharing Act of 1935
Provides for payments to counties in lieu of taxes, using revenues derived from the sale of products from refuges. A major revision in 1964 requires all revenues received from refuge products be distributed to counties for public schools and roads (this stipulation later removed). Another revision in 1974 requires that any remaining funds be transferred to the Migratory Bird Conservation Fund for land acquisition. A 1978 amendment stated payments to counties were established as:

- on acquired land, the greatest amount calculated on the basis of 75 cents per acre, three-fourths of one percent of the appraised value, or 25 percent of the net receipts produced from the land, and
- on land withdrawn from the public domain, 25 percent of net receipts and basic payments.

This amendment also required counties to pass payments along to other units of local government within the county that suffer losses in revenues due to the establishment of U.S. Fish and Wildlife Service areas.

Rehabilitation Act of 1973, as amended
Prohibits discrimination on the basis of disability under any program or activity receiving federal financial assistance.

Rivers and Harbors Appropriations Act of 1899, as amended
Requires the authorization by the Chief of Engineers prior to any work in, on, over, or under navigable waters of the United States. The Fish and Wildlife Coordination Act provides authority for the U.S. Fish and Wildlife Service to review and comment on the effects on fish and wildlife activities proposed to be undertaken or permitted by the COE. Service concerns include contaminated sediments associated with dredge or fill projects in navigable waters.

Secretarial Order 3289 Amendment 1: Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources (2010)
Secretarial Order 3285, issued in March 2009, made production and transmission of renewable energy on public lands a priority for the Department of the Interior. This Secretarial Order, 3289A1, issued in February 2010 establishes a Department-wide approach for applying scientific tools to increase understanding of climate change and to coordinate an effective response to its impacts on tribes and on the land, water, ocean, fish and wildlife, and cultural resources that the Department manages.

Sikes Act of 1960, as amended
Provides for the cooperation by the U.S. Departments of the Interior and Defense with state agencies in planning, development, and maintenance of fish and wildlife resources and outdoor

recreation facilities on military reservations throughout the United States. It requires the Secretary of each military department to use trained professionals to manage the wildlife and fishery resource under his jurisdiction and requires federal and state fish and wildlife agencies be given priority in management of fish and wildlife activities on military reservations.

Surface Mining Control and Reclamation Act of 1977
Regulates surface mining activities and reclamation of coal-mined lands. Further regulates the coal industry by designating certain areas as unsuitable for coal mining operations.

Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948
Provides that upon a determination by the Administrator of the General Services Administration, real property no longer needed by a federal agency can be transferred without reimbursement to the Secretary of the Interior if the land has particular value for migratory birds or to a state agency for other wildlife conservation purposes.

Transportation Equity Act for the 21st Century of 1998
Established the Refuge Roads Program, requires transportation planning that includes public involvement, and provides funding for approved public use roads and trails and associated parking lots, comfort stations, and bicycle/pedestrian facilities.

Treasury and General Government Appropriations Act of 2000
In December 2002, Congress required federal agencies to publish their own guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information that they disseminate to the public (44 U.S.C. 3502). The amended language is included in section 515(a). The Office of Budget and Management directed agencies to develop their own guidelines to address the requirements of the law. The Department of the Interior instructed bureaus to prepare separate guidelines on how they would apply the act. The U.S. Fish and Wildlife Service has developed “Information Quality Guidelines” to address the law.

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
Provides for uniform and equitable treatment of persons who sell their homes, businesses, or farms to the U.S. Fish and Wildlife Service. The act requires that any purchase offer be no less than the fair market value of the property.

Water Resources Planning Act of 1965
Established the Water Resources Council to be composed of Cabinet representatives, including the Secretary of the Interior. The Council reviews river basin plans with respect to agricultural, urban, energy, industrial, recreational, and fish and wildlife needs. The act also established a grant program to assist states in participating in the development of related comprehensive water and land use plans.

Wild and Scenic Rivers Act of 1968
Established a National Wild and Scenic Rivers System and prescribes the methods and standards through which additional rivers may be identified and added to the system. Section 5(d)(1) requires that in all planning by federal agencies for the use and development of water and related land resources, consideration be given to potential wild, scenic, and recreation rivers. Rivers are added to the national system based on their free-flowing character and their outstandingly remarkable scenic, recreation, geologic, fish and wildlife, historic, cultural, ecological, or other values. Rivers in the system are managed to maintain and protect these outstandingly remarkable values for present and future generations.

Wilderness Act of 1964
Defined the Wilderness resource and established the National Wilderness Preservation System. It directed the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park Systems and to recommend to the President the suitability of each such area or island for inclusion in the National Wilderness Preservation System, with final decisions made by Congress. The Secretary of Agriculture was directed to study and recommend suitable areas in the National Forest System. This act also prescribes the management of new inclusions as wilderness.

Youth Conservation Corps Act of 1970
Established a permanent Youth Conservation Corps program within the Departments of the Interior and Agriculture. Within the U.S. Fish and Wildlife Service, YCC participants perform many tasks on refuges, fish hatcheries, and research stations.

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Appendix F: Appropriate Use Designations

Introduction

Iowa Wetland Management District (WMD, district) managers decide if a new or existing use is an appropriate district use. This appendix includes a list of the appropriate use designations for the Iowa WMD.

The U.S. Fish and Wildlife Service (FWS, Service) appropriate use policy (603 FW 1) explains the decision process the district manager follows when first considering whether or not to allow a proposed use on a district. The district manager must first find a use to be appropriate before undertaking a compatibility review of the use and outlining the stipulations of the use.

The appropriate use policy clarifies and expands on the compatibility policy (603 FW 2.10(D)(1)), which describes when the district manager should deny a proposed use without determining compatibility. If a proposed use is found "not appropriate," the use will not be allowed and a compatibility determination will not be prepared. By screening out proposed uses not appropriate to the district, the district manager avoids unnecessary compatibility reviews. Although a use may be both appropriate and compatible, the district manager retains the authority to not allow the use or modify the use.

This policy does not generally apply to proposed public use of wetland and grassland easement areas of the National Wildlife Refuge System (NWRS, Refuge System). The rights acquired on these areas generally do not extend to control over such public uses except where those uses would conflict with the conditions of the easement (603 FW 1.2(A)). The Service's *Midwest Region Easements Manual* provides more direction on applying the appropriate use policy to easements (FWS, 2012c).

Background for this policy as it applies to Iowa WMD is found in the following statutory authorities:

- National Wildlife Refuge System Administration Act of 1966 (Administration Act), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) (16 U.S.C. § 668dd–668ee). This law provides the authority for establishing policies and regulations governing district uses, including the authority to prohibit certain harmful activities. The Administration Act does not authorize any particular use, but rather authorizes the Secretary of the Interior to allow uses only when they are deemed compatible. The Improvement Act provides the Refuge System mission and includes specific directives and identifies six wildlife-dependent uses as priorities for the Refuge System.
- *Refuge Recreation Act of 1962, (16 U.S.C. § 460k).* This law authorizes the Secretary of the Interior to allow public recreation in areas of the Refuge System when the use is an "appropriate incidental or secondary use."

District uses must meet at least one of the following four conditions to be deemed appropriate:

1. It is a wildlife-dependent recreational use as identified in the Improvement Act.

2. It contributes to fulfilling the district purpose(s), the Refuge System mission, or goals or objectives described in a district management plan approved after the Improvement Act was signed into law.
3. The use involves the take of fish and wildlife under state regulations.
4. The district has evaluated the use following the guidelines in this policy and found that it is appropriate. The criteria used by the manager to evaluate appropriateness can be found on the appropriate use forms completed for the district.

Uses that have been administratively determined to be appropriate but still require compatibility determinations are:

- six wildlife-dependent recreational uses as defined by the Improvement Act as hunting, fishing, wildlife observation, photography, environmental education and interpretation; and
- take of fish and wildlife under state regulations including hunting, fishing, and trapping.

Also covered under this policy are “specialized uses,” or uses that require specific authorization from the Refuge System, often in the form of a special use permit, letter of authorization, or other permit document. These uses do not include uses already granted by a prior existing right. Appropriateness findings for specialized uses are made on a case-by-case basis.

This policy does NOT apply to the following:

- Situations where reserved rights or legal mandates provide certain uses must be allowed.
- District management activities conducted by the Refuge System or a Refuge System-authorized agent designed to conserve fish, wildlife, and plants and their habitats. These activities fulfill district purpose(s) or the Refuge System mission and are based on sound professional judgment.

Appropriate use findings are made without public review and comment. However, if a proposed use is found to be appropriate, we must still determine that the use is compatible. The compatibility determination includes an opportunity for public involvement (603 FW 1.9(B)).

The following uses are deemed **appropriate** for the Iowa WMD:

- Bicycle Riding on Roads and Trails Open to Vehicular Traffic
- Wood Cutting (including firewood)
- Hay Harvest
- Food Plot Cultivation for Wildlife
- Virtual or Waypoint Geocaching
- Prescribed Livestock Grazing

The following uses are deemed **not appropriate** for the Iowa WMD:

- Dog Training
- Horseback Riding
- Off Road Vehicle Use: ATV, UTV, Dirt Bike, Motor Vehicle
- Overnight Camping
- Pheasant Stocking, Private
- Snowmobiling
- Target Shooting

Districts are national treasures for the conservation of wildlife. Through careful planning, consistent application of regulations and policies, diligent monitoring of the impacts of uses on wildlife resources, and preventing or eliminating uses not appropriate, the Refuge System conservation mission can be achieved while also providing the public with lasting opportunities to enjoy quality, compatible, wildlife-dependent recreation.

Appendix G: Draft Compatibility Determinations

In this appendix:

Introduction

Compatibility determinations are documents written, signed, and dated by the district manager and the regional chief of refuges that signify whether proposed or existing uses of the Wetland Management District (WMD, district) are compatible with its establishing purposes and the mission of the National Wildlife Refuge System (NWRS, Refuge System). This appendix provides copies of the compatibility determinations for Iowa WMD.

Before undertaking a compatibility review of a use, the district manager must first determine that the use is appropriate. A compatible use is any proposed or existing wildlife-dependent recreational use or other use of a district by the public or entity other than the U.S. Fish and Wildlife Service (FWS, Service) that, based on sound professional judgment, will not materially interfere with or detract from fulfilling the mission of the Refuge System or the purposes of the district. The final policy and regulations required by the National Wildlife Refuge System Improvement Act of 1997 provide guidance for determining compatibility.

If a proposed use is not appropriate, the use will not be allowed, and a compatibility determination will not be prepared.

A compatibility determination is required for activities on a refuge/district by the public or entity other than the Service including:

- all refuge/district recreational and educational programs;
- construction or expansion of recreational and educational facilities such as boardwalks and boat ramps;
- management activities performed by private parties in return for a market commodity, such as cooperative farming to provide food for wildlife; and
- granting or modifying rights-of-way through refuges/districts for pipelines, roads, or electrical transmission lines.

Activities when a compatible determination is NOT required include:

- refuge/district management activities such as prescribed burning, managing water levels, and controlling invasive species;
- routine scientific monitoring, studies, surveys, and censuses;
- conducting historic preservation;
- law enforcement activities; and
- maintaining refuge/district facilities, structures, or improvements.

Although a refuge/district use may be both appropriate and compatible, the district manager retains the authority to not allow the use or modify the use. The Service's *Midwest Region Easements Manual* provides more direction on applying compatibility to easements (FWS, 2012c).

A district compatibility determination was previously completed and approved for farming (cooperative farming) in December of 2011. A copy of that compatibility determination will be included in the final CCP.

Compatibility Determination

Use: Bicycle Riding on Roads and Trails Open to Vehicular Traffic

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. 715k-5, Stat. 813).

Funds appropriated under the Wetlands Loan Act are merged with Duck Stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 U.S.C. § 715, 715d–715r).

Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

Riding bicycles on the Iowa WMD for the purposes of pleasure, exercise, transportation, and wildlife viewing as environmentally sound transportation without noise or air pollution, typically associated with motor vehicles.

Is the use a proposed new use or an existing use?
Proposed new use.

Is the use a priority public use?
No.

Where would the use be conducted?
On all roads and trails open to vehicular traffic, self-guided by regulatory signage on Waterfowl Production Areas (WPAs) within the WMD.

When would the use be conducted?
Year round; however, snow levels during the winter months would make this use difficult

How would the use be conducted?
Self-guided. The number of users at any one time is expected to be minimal. The large size of the district is expected to keep users spread out; the frequency of users is expected to be irregular.

Why is this use being proposed?
Public request.

Availability of Resources:

What resources are needed to properly and safely administer use?
Few to no new resources would need to be utilized to allow bicycle riding on roads and trails open to vehicular traffic. Currently WPAs contain regulatory signs showing where vehicles can and cannot travel. Service roads are currently gated with chain gates restricting vehicles including bicycles. No new infrastructure is anticipated such as bicycle lanes, racks, etc. WPAs are currently set up for vehicles with parking areas and pull-offs, and are annually maintained. The approximate annual cost to maintain these parking areas is $4,000 and is completed regardless of this use.

Are existing district resources adequate to properly and safely administer the use?
Yes.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
The short-term impact of bicycle riding on roads and trails open to vehicular traffic within the district would be conflicts with other users such as hunters, anglers, trappers, and wildlife observers. Impacts would be temporary and be less than that of other motor vehicles. Impacts may occur if bicycles travel off the designated open roads creating ruts and damage to wildlife habitat. Short-term temporary disturbance to waterfowl may occur but most likely will not negatively affect production due to infrequency. No long-term impacts are anticipated with this use.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations*

***According to state regulations Iowa Code 52.1(3) *Waterfowl refuges*:** "The following areas under the jurisdiction of the department of natural resources are established as waterfowl refuges where posted. It shall be unlawful to hunt ducks and geese on the following areas, where posted, at any time during the year. It shall be unlawful to trespass in any manner on the following areas, where posted, during the dates posted, both dates inclusive . . . " **This compatibility determination does not apply to at least some portion of the following WPAs: Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties).**

Stipulations Necessary to Ensure Compatibility:

1. Use limited to non-motorized pedal powered bicycles.
2. No infrastructure will be constructed for this use including construction of bicycle trails, racks etc.
3. Bicycle use will only be permitted on existing trails open to motorized travel, and parking areas open to the public.

Justification:

Use of bicycles by visitors to the Iowa Wetland Management District is an excellent method to observe wildlife. Bicycles are quiet and pose little to no effect to nesting waterfowl when they remain in designated areas. Using bicycles can enhance a priority public use of wildlife observation. This use provides a green solution to visitors wishing to get exercise and observe the wildlife of the district.

Signature: District Manager /<name>/ / <date> /
(Signature and Date)

Concurrence: Regional Chief /<name>/ / <date> /
(Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2023

Compatibility Determination

Use: Wood Cutting (including firewood)

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. § 715k–5, Stat. 813).

Funds appropriated under the Wetlands Loan Act are merged with Duck Stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 U.S.C. § 715, 715d–715r).

Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

Removal of standing and/or fallen trees applies to all wood removal activities regardless of the ultimate use of the wood (firewood, lumber, pulp, etc.). Wood cutting by the public is considered an economic use of a district natural resource and would be allowed in the district under the authority of a special use permit issued by the district manager.

Is the use a proposed new use or an existing use?
Existing use.

Is the use a priority public use?
No.

Where would the use be conducted?
Harvest would occur throughout the district varying in size from a portion of an acre up to several hundred acres depending on the management objective of the area, as well as the quantity and quality of the wood. These sites would typically be found at abandoned

farmsteads, along existing shelter belts and windbreaks, and in other areas where trees are encroaching on grassland and wetland habitats.

When would the use be conducted?
Wood cutting activities could be authorized throughout the year; however, the majority of activity would occur during the winter months when frozen ground would facilitate access and afford protection to underlying soils and desired vegetation.

How would the use be conducted?
The district is located at the southernmost portion of the Prairie Pothole Region, an area known for its duck production. Land is primarily acquired, restored, and managed for the production of waterfowl. These uplands and wetlands provide the first suitable breeding habitat available to waterfowl on their northern flight. They also benefit other migratory birds and resident wildlife as well. Today, the tallgrass prairie ecosystem is globally endangered, and most of Iowa's wetlands have been drained. As a result, many grassland- and wetland-dependent migratory birds are in great peril.

The majority of the district is comprised of restored and intact grassland in the uplands and restored wetlands in the lowlands. These habitat complexes contain both native and nonnative grass and forb species, as well as encroaching woody vegetation. If left untreated, overtime, the encroaching woody vegetation reduces or eliminates desirable prairie/wetland herbaceous vegetation growth necessary for waterfowl and other migratory birds. Typically, prescribed burning, haying, and grazing are used as tools to inhibit the encroaching woody vegetation. However, various factors can limit the use of these tools on all or portions of some Waterfowl Production Areas (WPAs). Nevertheless, active removal of the encroaching woody vegetation by wood cutting is often less limiting. Therefore, wood cutting would be another tool that would accomplish the same objectives by promoting the reestablishment of the grasses and forbs in the uplands and maintain healthy wetlands. Due to the loss of large wildfires and large-ungulate grazing prior to European settlement and the fast-growing nature of many tree species, wood cutting has become a more frequently utilized tool to help restore and maintain the tallgrass prairie community and its associated wetlands. This is especially true as funding and other factors limit the use of primary grassland management tools.

Equipment used for harvest would depend on the site and its management objectives, as well as the permittee's capabilities and may include axes, chainsaws, tractor-mounted shredders and shears, and traditional logging equipment.

Why is this use being proposed?
District management tool and public request.

Availability of Resources:

What resources are needed to properly and safely administer use?
Staff time will be needed to administer special use permits for wood cutting, along with mapping and designating areas that need woody encroachment removed. Approximately twelve staff hours per year are anticipated for this use.

Are existing district resources adequate to properly and safely administer the use?
Yes.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
In permitting this type of activity, the potential exists to directly impact waterfowl production. This could happen by displacement of birds from localized areas due to disturbance, or crushing of nests because of access for this activity. These impacts are easily avoided by timing of the activity in accordance with site-specific characteristics. In limited and rare instances, a small number of individuals of tree-nesting species (e.g. wood duck, hooded merganser, etc.) may be displaced from a local area after their nest trees are removed. The indirect impacts to waterfowl production that will occur would be primarily beneficial by facilitating the restoration of tallgrass prairie and removing artificially created predator habitat from within the WPAs. Access for removing wood may affect habitat by rutting soils, destroying ground cover, creating weed seedbeds, and increasing sedimentation due to runoff in nearby wetlands. However, these impacts can also be avoided by regulating the timing of the activity.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations*

***According to state regulations Iowa Code 52.1(3) *Waterfowl refuges*.** "The following areas under the jurisdiction of the department of natural resources are established as waterfowl refuges where posted. It shall be unlawful to hunt ducks and geese on the following areas, where posted, at any time during the year. It shall be unlawful to trespass in any manner on the following areas, where posted, during the dates posted, both dates inclusive . . . " **This compatibility determination does not apply to at least some portion of the following WPAs: Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties).**

Stipulations Necessary to Ensure Compatibility:

1. Travel off designated routes, will be limited to periods when ground is frozen.
2. Wood harvest activities will avoid the primary nesting period for waterfowl and migratory birds.
3. Special use permits are required for this use.
4. Best management practices will be implemented to avoid disturbance, erosion, desirable habitat damage, weed dispersal and migratory bird take.
5. All applicable federal, state, and special district regulations will apply.

Justification:

Any direct impacts on waterfowl production (take, disturbance, etc.) can be largely avoided by timing the activity so that it is not coincident with the waterfowl production season. Removal of trees in certain instances will, on occasion, eliminate Wood Duck, Hooded Merganser, or other cavity-nesting species habitat. This would be an irregular and occasional impact and, since most wood harvest will be associated with restoration sites, it is unlikely that these areas would have provided historic nesting sites. Due to the benefits that would be realized by other waterfowl species, and the abundance of artificial and natural nest sites for cavity-nesting species in the area, these impacts would not significantly detract from the WPAs' purpose or Refuge System mission.

Impacts to the habitat because of access to WPAs for wood removal purposes are potentially significant but also easily avoided. Areas where woody species are removed for the purpose of conversion of the habitat type to prairie will likely receive follow-up treatments of burning, farming, or both. Ground disturbance in these areas is less problematic and possibly desirable depending on the specific site. Access to and from these areas will need to be carefully controlled via special use permit to avoid impacts such as rutting and increased sedimentation in area wetlands due to runoff. If existing roads are not present, access can be restricted to periods of frozen ground to avoid or minimize impacts to underlying vegetation and soils.

Other indirect impacts are generally considered positive and thus do not materially interfere with or detract from the purpose of waterfowl production or the Refuge System mission. The removal of trees along trails, in shelterbelts, and within old homesites will benefit waterfowl production by assisting with the restoration of prairie habitat and eliminating predator habitat and perch sites. Individuals participating in the wood harvest program will be under special use permit, and thus site-specific stipulations will ensure resource protection and achievement of management goals. Control of woody species encroachment on prairie habitats is a necessary management activity for the district in converting areas back to their historical grassland condition and directly supports the mission of the Refuge System.

Signature: District Manager /<name>/ _/_<date>_/_
(Signature and Date)

Concurrence: Regional Chief /<name>/ /<date>/
(Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2023

Compatibility Determination

Use: Hay Harvest

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. § 715k–5, Stat. 813).

Funds appropriated under the Wetlands Loan Act are merged with Duck Stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 U.S.C. § 715, 715d–715r).

Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

The cutting and removal, by baling and transport to an off-district location, of grasses and forbs, either non-native cool season species such as brome or native warm or cool season species. This use is typically completed by a cooperative farmer under authority of a cooperative farming agreement or special use permit issued by the district manager or Iowa Department of Natural Resources district biologists.

Is the use a proposed new use or an existing use?
Existing use.

Is the use a priority public use?
No.

Where would the use be conducted?
Waterfowl Production Area (WPA) tracts in Iowa average 100 acres in size and are intermingled with private and other public lands. Although specific acreages for fields to be hayed will vary by

unit, they would typically range from five-acre firebreaks to 80-acre units. In that case, haying could possibly occur over the entire unit and up to several hundred acres. Hay acreages for firebreaks would be very small, estimated at less than five acres per WPA.

When would the use be conducted?
Seasonally, after July 15 of each year.

How would the use be conducted?
Haying can be an effective management tool as part of an overall grassland management plan to improve and maintain grasslands for the benefit of migratory birds. Grasslands need periodic renovation to maintain vigor, diversity, and the structure necessary for migratory bird use. Haying is an effective alternative to burning or grazing, which are the two other primary means used to maintain grassland vigor. If local site conditions preclude use of prescribe fire due to hazards to neighboring property or a similar challenge, removal of accumulated biomass through haying would reduce unwanted overstory cover and encroaching woody vegetation. This would allow for more vigorous regrowth of desirable species following the haying, although results are neither as dramatic nor as positive as with the use of prescribed fire.

Haying of a nonnative cool season field is an effective prepatory step prior to spraying the field with herbicide to kill all existing vegetation. Removal of the heavy grass overstory through haying allows the chemical to be more effective at treating the target plants. Thorough removal of the unwanted grasses ensures greater success of the planted native grasses for both interseeding or plowing the soil prior to seeding. Haying is also effective at preparing WPAs for wetland restoration activities. The haying can be used to remove the tall vegetation and facilitate the construction of dikes, water control structures, and rerouting drainage tile. Finally, haying can be used to establish firebreaks that facilitate safe prescribed fire. Strategically placed grass strips are hayed in early fall, so the vegetation green-ups earlier in the spring with no dead overstory biomass. Firebreaks have also been developed on WPAs and hayed annually to create defensible space for houses and other Wildland Urban Interface structures. Haying of these firebreaks creates a green space between neighboring houses and dense grass fuels.

Why is this use being proposed?
District management tool.

Availability of Resources:

What resources are needed to properly and safely administer use?
Planning for this use would not require any additional resources and would be a normal part of grassland management. Staff time will be need to complete the hay bid process, develop public notices, and issue special use permits and bills for collection.

Are existing district resources adequate to properly and safely administer the use?
Yes.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
Haying will result in short-term disturbances and long-term benefits to both resident and migratory wildlife that use WPAs. Short-term impacts will include disturbance and displacement typical of any noisy heavy equipment operation. Cutting and removal of standing grasses will also result in short-term loss of habitat for those species requiring tall grasses for feeding and perching (i.e., Bobolink and Dickcissel). Long-term benefits will result as increased vigor of regrown grasses and establishment of highly desirable native tallgrass species improves conditions for those same species affected by the short-term negative impacts. Longer-term negative impacts may occur to resident wildlife species such as pheasant that would lose overwintering habitat in the hayed areas. However, strict time constraints placed on this use will limit anticipated impacts to these relatively minor areas.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Haying will only be allowed after July 15 to minimize disturbance to nesting migratory birds. In normal years, most birds are off the nest by this date.
2. Bales must be removed from the WPA within two days of baling.
3. Windrowed grass left lying to dry prior to baling must be raked and moved every two days if left on newly seeded native grass and under no circumstances should remain on the ground more than six days prior to baling.

Justification:

Haying will not materially interfere with waterfowl production if completed within the necessary stipulations. Use of haying, as a management tool can be a valuable technique for providing long-term habitat improvements to grassland that otherwise, would degrade through natural succession or dominance of non-native plants. Without this tool, the areas would suffer encroachment of undesirable woody species such as box elder or ash or would remain in unwanted non-native cool season grasses such as brome. Use of the areas by waterfowl or grassland-dependent species such as Bobolink, Dickcissel, or Grasshopper Sparrow would slowly decline in the absence of haying or other similar management.

Signature:	District Manager	/<name>/ / <date> / (Signature and Date)
Concurrence:	Regional Chief	/<name>/ / <date> / (Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2023

Compatibility Determination

Use: Environmental Education

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. § 715k–5, Stat. 813).

Funds appropriated under the Wetlands Loan Act are merged with Duck Stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 U.S.C. § 715, 715d–715r).

Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

A process designed to teach citizens and visitors the history and importance of conservation and the biological and the scientific knowledge of the Nation's natural resources. Environmental education within the Refuge System incorporates on-site, off-site, and distance learning materials, activities, programs, and products that address the audience's course of study, district purpose(s), physical attributes, ecosystem dynamics, conservation strategies, and the Refuge System mission. Programs across the district will include interpretation of wetland, tallgrass prairie resources, migratory birds, resident wildlife, and water quality. FWS staff or partner organizations including Iowa Department of Natural Resources, County Conservation Boards (CCBs), Friends organizations, colleges, and 4-H and scouting groups could conduct environmental education activities in the district.

Partner colleges and universities may use Waterfowl Production Areas (WPAs) to observe, and study prairie seeding and restoration efforts. Other academic efforts like star observation by school classes and groups may take place in parking areas and access points on WPAs in the

district. Management of this use will be through a signed special use permit issued by the district manager or a similar agreement with the Iowa DNR.

Is the use a proposed new use or an existing use?
Proposed new use.

Is the use a priority public use?
Yes.

Where would the use be conducted?
Across the district, except in prohibited areas.

When would the use be conducted?
Activities may be authorized throughout the year, but participants will be encouraged to abstain from activities during the primary waterfowl-nesting season (April through July).

How would the use be conducted?
Access for this use will be mainly by foot but may include snowshoeing, cross-country skiing, and canoe/kayak (boating).

Why is this use being proposed?
Priority public use and public request.

Availability of Resources:

What resources are needed to properly and safely administer use?
Most of the district is managed by Iowa DNR biologists through a Memorandum of Understanding. Limited staff and funds are available to conduct and enhance environmental education opportunities on the WMD; however, partnering with neighboring CCBs and schools has proven to be a cost effective solution to staffing for this use. Staff time to develop and issue special use permits will be necessary for this use along with monitoring and working with partners on developing a message for the use. Some structures, boundary and regulatory signs, parking lots, and other minor facilities are currently on WPAs and will facilitate environmental education without any further costs.

Are existing district resources adequate to properly and safely administer the use?
Yes, if utilize partners.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
Overall, the impacts to WPAs and their associated wildlife populations from environmental education uses will be minimal. There will be temporary disturbance to waterfowl and other wildlife, but it will not likely interfere with waterfowl production. Special use permits for this use will be limited to times and locations that will have the least impact during pair bonding, nesting, and brood rearing of waterfowl. Group sizes will be limited to lessen possible impacts to waterfowl and WPA purpose. Vehicles and school busses will be limited to parking areas and service roads to minimize disturbance to vegetation and wildlife. If auto tour roads are proposed to facilitate this use, they will be designed to minimize disturbance to waterfowl during the spring breeding/nesting season.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations*

***According to state regulations Iowa Code 52.1(3) *Waterfowl refuges*.** "The following areas under the jurisdiction of the department of natural resources are established as waterfowl refuges where posted. It shall be unlawful to hunt ducks and geese on the following areas, where posted, at any time during the year. It shall be unlawful to trespass in any manner on the following areas, where posted, during the dates posted, both dates inclusive . . . " **This compatibility determination does not apply to at least some portion of the following WPAs: Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties).**

Stipulations Necessary to Ensure Compatibility:

1. Environmental education may be authorized at various times of the year; however, partners are encouraged to avoid the primary nesting period (April through July).
2. Travel off designated routes and parking areas is prohibited, except as stipulated in a special use permit.
3. All applicable federal, state, and special district regulations will apply.

Justification:

This use is a wildlife-dependent priority public use and will not diminish the primary purposes of the district, which is to serve as production areas for waterfowl and to provide habitat for migratory birds. This use will meet the mission of the Refuge System by furthering understanding and knowledge of the Nation's migratory bird status, needs, and conservation efforts. Use of WPAs for environmental education will increase the public's appreciation for conservation areas and local efforts, along with providing local schools and communities a look into the natural wildlife heritage of this area prior to settlement.

Signature: District Manager /<name>/ / <date> /
(Signature and Date)

Concurrence: Regional Chief /<name>/ / <date> /
(Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2028

Compatibility Determination

Use: Food Plot Cultivation for Wildlife

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. § 715k–5, Stat. 813).

Funds appropriated under the Wetlands Loan Act are merged with Duck Stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 U.S.C. § 715, 715d–715r).

Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

Establishment of wildlife food plots on Waterfowl Production Areas (WPAs) throughout the Iowa Wetland Management District to provide important food and cover resources in harsh winter conditions. The vast majority of WPAs are managed by the Iowa Department of Natural Resources (DNR) under a Memorandum of Understanding (MOU). Food plots are addressed in the MOU which authorizes the Iowa DNR to establish and maintain food plots at levels identified in the Comprehensive Conservation Plan, Habitat Management Plan (to be written), and individual unit plan.

Food plots are small agriculture fields typically ranging in size from three to 10 acres consisting mainly of corn, soybeans, sunflowers, wheat, barley, oats, rye, buckwheat, millet, and sorghum. Placement and movement of individual food plots within a WPA will vary based on factors such as food plot availability on neighboring properties, best conservation practices, shape and arrangement of other habitat types within a WPA, invasive species control, neighboring crop damage complaints, and wildlife disturbance factors. Establishment of food plots will provide winter cover and food resources to resident wildlife during harsh weather conditions.

Food plots are not a priority public use as identified in the National Wildlife Refuge System Improvement Act of 1997. Food plots are a nonessential but helpful tool to facilitate other priority public uses including hunting, wildlife observation, and photography. Food plots may also be helpful in reaching goals outlined in the North American Waterfowl Management Plan (NAWMP) of growing hunters and other outdoor enthusiast groups to conserve and protect wetland areas. These plots may help provide desirable densities of wildlife for public viewing, hunting and photography.

Is the use a proposed new use or an existing use?
Existing use.

Is the use a priority public use?
No.

Where would the use be conducted?
Select WPA tracts within the Iowa WMD that have been identified as a strategic location for a food plot.

When would the use be conducted?
Crops will typically be planted in spring and may be harvested in early spring the following year.

How would the use be conducted?
Food plots are generally planted and maintained by private individuals (cooperative farmers), other agencies (Iowa DNR) or sporting clubs. Cropping activities are controlled through an agricultural agreement between the cooperator and the Iowa DNR; however, the Service provides guidelines such as pesticide use.

Why is this use being proposed?
Wildlife management tool for the district.

Availability of Resources:

What resources are needed to properly and safely administer use?
The staff time required for this use is already committed through partnership efforts with Iowa DNR and the MOU. The agriculture program in the district is the responsibility of the Iowa DNR. Service staff time will only include planning efforts to evaluate the need for food plots on newly acquired properties and reviewing management plans for food plot use. Service staff will be needed within the first year of the Comprehensive Conservation Plan implementation to review food plot locations in the district, along with preparing a Geographic Information System (GIS) map layer with food plot locations. On years following this evaluation, staff time will be required to update the GIS layers annually. Currently staff time is available and committed for this use.

Are existing district resources adequate to properly and safely administer the use?
Yes.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
The proposed use will positively affect wintering Ring-necked Pheasants by providing reliable food resources near high quality cover, thus reducing exposure to predators and harsh weather conditions. Food plots also make high-energy grains available to waterfowl, Mourning Doves, and other migratory birds during spring and fall migration. The borders of food plots often contain annual forbs, which provide forage for a variety of sparrows and other songbirds. Some species of wildlife, such as white-tailed deer, will benefit from the type of habitat produced by the creation of a food plot.

Food plots help facilitate priority public uses that engage the public with wildlife such as hunting, wildlife observation, and photography. Food plots can be used to divert foraging white-tailed deer from adjacent cropland, consequently reducing conflicts with neighboring farmers. Good neighbors and an engaged public provide positive long-term support for the conservation of waterfowl and other migratory birds, as well as their habitats.

Minimal negative impacts are anticipated, because food plots will typically be smaller than10 acres in size. In addition, food plots will be limited to three percent or less of district uplands. Food plots will reduce the available nesting cover for waterfowl, migratory birds, and other wildlife. Grassland bird research suggests that birds will utilize crop fields for nesting; however, the disturbance common with farming practices may be detrimental to nest success (Warner 1994 and Best, 1986). Many grassland nesting birds and all upland nesting waterfowl species have better nesting success in larger contiguous blocks of grassland habitat (Winter and Faaborg, 1999 and Winter et al., 2000). Careful placement of food plots can lessen the impacts of edge and the fragmentation of habitat.

Impacts to waterfowl may be lessened by placing food plots strategically in the best locations for critical resident wildlife needs. The public uses associated with food plots may increase wildlife disturbance somewhat. However, the beneficial aspects of food plots for these uses are typically realized outside of the breeding season, and food plots can be used to concentrate these uses to areas where the associated disturbance is less detrimental (Korschgen and Dahlgren, 1992). Since WPAs are open to hunting, any increases in the white-tailed deer population related to food plots will be controlled. Soils will be impacted through the placement and management of food plots. Farming practices that disturb the soil by tilling create the potential for soil erosion. Chemical usage on food plots could potentially have negative effects on adjacent waters, vegetation, and associated wildlife. Food plot farming practices will use best management practices to lessen the effects of soil erosion and chemical usage. The stipulations listed later in this document will address the criteria needed for food plot placement and management in the district.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. No greater than three percent of the Iowa WMD uplands may be in food plots at any one time.
2. Food plot species will be limited to corn, soybeans, milo, sunflowers, wheat, barley, oats, rye, buckwheat, millet, and sorghum. The entire crop will remain standing through the winter. Manipulation of the crop such as mowing is not allowed.
3. Food plot farming and maintenance will comply with the Migratory Bird Treaty Act 16 U.S.C. 703–712 P.L. 105–312 and 50 CFR 20.11–21 and not constitute baiting.
4. Crop seeds used in food plots will be from a non-genetically modified seed source.
5. Chemicals used on food plots must be approved through the pesticide use proposals. No insecticides will be allowed on food plots.
6. New WPA acquisitions requesting food plot placement will need project leader approval.

Justification:

Food plot use in the Iowa WMD is a compatible practice when the above stipulations are in place. This use as proposed will not materially detract from the waterfowl and migratory bird purposes of the district. Allowing the use of food plots will assist the Iowa DNR in reaching their resident wildlife goals and provide the public with opportunities to recreate on district properties. Use of food plots may also grow the number of hunters that will support a goal of the NAWMP. An MOU between the Service and Iowa DNR establishes that food plots are an acceptable practice in the district. Any negative impacts to waterfowl will be lessened by following the stipulations and evaluating the effects of the program.

The goals of the NAWMP focus on engaging people with nature and growing the number of hunters. Within Iowa, the Iowa DNR and the public generally view food plots as a positive practice providing excellent viewing and hunting opportunities. Allowing food plots on WPAs within the district, albeit limited, will assist the Iowa DNR (a key Service partner) in providing hunting opportunities that will in turn gain public support for waterfowl and wetland protection.

Signature: District Manager /<name>/ / <date> /
(Signature and Date)

Concurrence: Regional Chief /<name>/ / <date> /
(Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2023

Compatibility Determination

Use: Virtual or Waypoint Geocaching

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. § 715k–5, Stat. 813).

Funds appropriated under the Wetlands Loan Act are merged with Duck Stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 U.S.C. § 715, 715d–715r).

Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

Geocaching is a game of adventure using handheld Geographic Positioning System (GPS) devices. The devices are used to locate caches of "prizes," which are found using coordinate points only. Often a cache is a container filled with treasures and a cache log, among other things. "Cachers" obtain coordinates to a cache, use their handheld GPS to make their way to the cache, record their adventure, take a prize, and leave a prize. The placement of these caches, depending on the location, can require digging into the ground, moving rocks or vegetation, or other alterations to the area in order to somewhat hide the cache.

An ideal alternative to the physical cache is a virtual cache, or waypoint cache. A waypoint cache uses existing landmarks, while the cache itself is held at a public use site. Cachers have to visit a starting landmark determined by given coordinates then follow somewhat of a scavenger hunt, going from landmark to landmark using clues or additional coordinate points until a final clue is given, leading the cachers to the public use site (e.g., office or visitor center). Cachers can then pick up their prize, leave a prize if they like, and write in the virtual cache log.

The challenge of a virtual cache can be just as great as, if not more than, that of looking for a physical cache and will not impact areas outside of normal public use locations.

Is the use a proposed new use or an existing use?
Proposed new use.

Is the use a priority public use?
No.

Where would the use be conducted?
Near roadsides and parking areas where disturbance would be limited, under special use permit.

When would the use be conducted?
Outside the primary waterfowl nesting season (April through July).

How would the use be conducted?
To teach users about a geologic or biologic feature such as glaciated pothole wetlands or northern tallgrass prairie within the district. This type of geocaching would involve a teacher or professor using the geocache to teach an environmental principle. This use would be regulated by a special use permit issued by the district manager.

Why is this use being proposed?
One public request for teaching the natural history of the area, in particular how glaciers shaped the landscape.

Availability of Resources:

What resources are needed to properly and safely administer use?
Resources needed for this use would include the time to write special use permits with parameters as well as to monitor the use. Some law enforcement efforts may be needed to address permit compliance and other non-permitted geocaches (with physical digging or caching). However, current staff and budget would not preclude this use.

Are existing district resources adequate to properly and safely administer the use?
Yes.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
Use of the district for virtual geocaching will benefit fish, wildlife, and plant populations and their habitats, because it will introduce a different audience to the Refuge System and its purpose. Geocachers, as a community, are warned against establishing caches, physical or virtual, on federal public lands without permission of the land manager. However, it can be anticipated that un-permitted caches may currently be on district property, and actual caches in the ground or hidden on site may occur. This unpermitted activity will cause disturbance to the soil and surrounding vegetation. The use of geocaches as an environmental education tool, with virtual or waypoint caches may cause temporary disturbance to nesting waterfowl; however, it is short-term and is not anticipated to negatively impact the purpose of the district. This type of

geocaching will assist the district with providing the public a message about the natural heritage of the Iowa landscape and how the Service plays a role in restoring this landscape.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations*

***According to state regulations Iowa Code 52.1(3) *Waterfowl refuges*.** "The following areas under the jurisdiction of the department of natural resources are established as waterfowl refuges where posted. It shall be unlawful to hunt ducks and geese on the following areas, where posted, at any time during the year. It shall be unlawful to trespass in any manner on the following areas, where posted, during the dates posted, both dates inclusive . . . " This **compatibility determination does not apply to at least some portion of the following Waterfowl Production Areas: Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties).**

Stipulations Necessary to Ensure Compatibility:

1. Special use permits are required for all geocache sites.
2. Sites permitted will be near roadsides and parking areas where disturbance will be limited.
3. Geocaching activities should avoid waterfowl nesting periods.
4. Geocache sites will be waypoint of virtual only, no physical cache is allowed.

Justification:

Waypoint and virtual geocaching use in the district is a unique opportunity to use technology to help spread a conservation message. This use, if managed by the above stipulations, will only cause temporary and short-term disturbance to waterfowl production. Waypoint and virtual geocaching will enhance the wildlife-dependent priority public uses by exposing a new user group to the district's landscapes and wildlife. Geocaching will assist in meeting the district's goal of a unified conservation message and will connect more youth with the outdoors.

Signature: District Manager /<name>/ _/_<date>_/_
(Signature and Date)

Concurrence: Regional Chief /<name>/ _/_<date>_/_
(Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2023

Compatibility Determination

Use: Hunting in Accordance with State Regulations (includes motorboat use)

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. § 715k–5, Stat. 813).

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Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

Shooting migratory game birds, upland game birds and mammals, and big game on Waterfowl Production Areas (WPAs) throughout the district in accordance with state seasons and governed by both federal and state regulations. Hunting on WPAs may be suspended due to unusual or critical conditions affecting land, water, vegetation, or wildlife populations. Hunting will facilitate four other priority public uses: wildlife observation, wildlife photography, environmental education, and interpretation.

Is the use a proposed new use or an existing use?
Existing use.

Is the use a priority public use?
Yes.

Where would the use be conducted?
On all open WPAs; see Determination section below.

When would the use be conducted?
The majority of the use occurs in the fall, from mid-September through the end of December. Spring turkey hunting occurs on a few WPAs with a state season running from early April to the end of May.

How would the use be conducted?
This use must occur In accordance with state regulations. Some WPAs have trails to them from public roads to gain access. Most WPAs have parking areas, usually less than one acre in size, to keep vehicles and traffic off public roads. The State of Iowa uses hunting as a management tool through appropriate season setting and harvest objectives. This tool allows for wildlife-dependent public recreation and supports the harvest of surplus wildlife.

Why is this use being proposed?
Regulation, wildlife management tool, priority public use, and public request.

Availability of Resources:

What resources are needed to properly and safely administer use?
Few additional fiscal resources are necessary to conduct this use. WPAs are open by statue to hunting, fishing, and trapping and have provided such opportunities since acquired. As a result, some infrastructure is already in place to facilitate this use. The majority of the WPAs in the district are managed cooperatively through a Memorandum of Understanding with the Iowa Department of Natural Resources (DNR), which includes some law enforcement responsibilities.

Are existing district resources adequate to properly and safely administer the use?
Yes, by partnering with the Iowa DNR staff of conservation officers and local wildlife biologists.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
Although hunting causes mortality and temporary disturbance to migratory birds and other wildlife, harvesting populations to the carrying capacity of existing habitat insures long-term health and survival for the species and its habitat. Most hunting occurs well after the breeding season for migratory birds and other wildlife so there would be little or no disturbance to the district's central purpose. Since most access for hunting occurs by foot traffic, some disturbance is anticipated; however, it would be temporary. Hunting on WPAs will assist in promoting an understanding and appreciation of wetland and prairie natural resources as well as management of land administered by the Refuge System.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations*

***According to state regulations Iowa Code 52.1(3) *Waterfowl refuges*.** "The following areas under the jurisdiction of the department of natural resources are established as waterfowl refuges where posted. It shall be unlawful to hunt ducks and geese on the following areas, where posted, at any time during the year. It shall be unlawful to trespass in any manner on the following areas, where posted, during the dates posted, both dates inclusive . . . " **This compatibility determination does not apply to at least some portion of the following WPAs: Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties).**

Stipulations Necessary to Ensure Compatibility:

1. Travel in, or use of, any motorized or other vehicle is prohibited except by special use permit. Parking in designated areas or on public roads is permissible for access, but use of horses is not permissible.
2. Personal property may not be left unattended or abandoned.
3. Hunting tree stands that are not removed daily must have the hunter's name or Iowa hunting license number clearly marked on the stand. Tree stand installation and removal will comply with regulations for state Wildlife Management Areas. Current regulations: seven days prior to hunting season and removal seven days after hunting season.
4. All watercraft are restricted to no larger than 15 horsepower motors.
5. All applicable federal, state, and special district regulations apply.

Justification:

WPAs are open to hunting of migratory game birds, upland game, and big game by regulation and in accordance with state law. Hunting will not materially interfere with or detract from the purposes for which these units were established. As a management tool, hunting can be used to ensure healthy wildlife populations and sustainable habitat. Hunting is a priority wildlife-dependent public use and will facilitate four other priority public uses: wildlife observation, wildlife photography, environmental education, and interpretation. The use of hunting will assist the district in meeting the mission of the Refuge System by managing the Nation's wildlife and plant resources for the benefit of the American public.

Signature: District Manager /<name>/ _ / _ <date> _ / _
(Signature and Date)

Concurrence: Regional Chief /<name>/ / <date> /
(Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2028

Compatibility Determination

Use: Interpretation

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. § 715k–5, Stat. 813).

Funds appropriated under the Wetlands Loan Act are merged with Duck Stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 U.S.C. § 715, 715d–715r).

Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

Interpretation is a communication process that forges emotional and intellectual connections between the audience and the resource. Programs may include activities, talks, publications, audio-visual media, signs, and exhibits that convey key natural and cultural resource messages to visitors. Programs across the district will include interpretation of wetland, tallgrass prairie resources, migratory birds, resident wildlife, and water quality. Service staff or partner organizations including Iowa Department of Natural Resources (DNR), County Conservation Boards (CCBs), Friends organizations, colleges, and 4-H and scouting groups could conduct environmental education activities in the district.

Partner colleges and universities may use Waterfowl Production Areas (WPAs) to observe, and study prairie seeding and restoration efforts. Management of this use will be through a signed special use permit issued by the district manager or a similar agreement with the Iowa DNR.

Is the use a proposed new use or an existing use?
Proposed new use.

Is the use a priority public use?
Yes.

Where would the use be conducted?
Across the district, except in prohibited areas.

When would the use be conducted?
Activities may be authorized throughout the year, but participants will be encouraged to abstain from activities during the primary waterfowl-nesting season (April through July).

How would the use be conducted?
Access for this use will be mainly by foot but may include snowshoeing, cross-country skiing, and canoe/kayak (boating).

Why is this use being proposed?
Priority public use and public request.

Availability of Resources:

What resources are needed to properly and safely administer use?
Most of the district is managed by Iowa DNR biologists through a Memorandum of Understanding. Limited staff and funds are available to conduct and enhance interpretation opportunities on the WMD; however, partnering with neighboring CCBs and schools has proven to be a cost effective solution to staffing for this use. Staff time to develop and issue special use permits will be necessary for this use along with monitoring and working with partners on developing a message for the use. Some structures, boundary and regulatory signs, parking lots, and other minor facilities are currently on WPAs and will facilitate interpretation without any further costs.

Are existing district resources adequate to properly and safely administer the use?
Yes, if utilize partners.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
Overall, the impacts to WPAs and their associated wildlife populations from interpretation will be minimal. There will be temporary disturbance to waterfowl and other wildlife, but it will not likely interfere with waterfowl production. Special use permits for this use will be limited to times and locations that will have the least impact during pair bonding, nesting, and brood rearing of waterfowl. Group sizes will be limited to lessen possible impacts to waterfowl and WPA purpose. Vehicles and school busses will be limited to parking areas and service roads to minimize disturbance to vegetation and wildlife. If auto tour roads are proposed to facilitate this use, they will be designed to minimize disturbance to waterfowl during the spring breeding/nesting season.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations*

***According to state regulations Iowa Code 52.1(3) *Waterfowl refuges*.** "The following areas under the jurisdiction of the department of natural resources are established as waterfowl refuges where posted. It shall be unlawful to hunt ducks and geese on the following areas, where posted, at any time during the year. It shall be unlawful to trespass in any manner on the following areas, where posted, during the dates posted, both dates inclusive . . . " **This compatibility determination does not apply to at least some portion of the following WPAs: Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties).**

Stipulations Necessary to Ensure Compatibility:

1. Interpretation may be authorized at various times of the year; however, partners are encouraged to avoid the primary nesting period (April through July).
2. Travel off designated routes and parking areas is prohibited, except as stipulated in a special use permit.
3. All applicable federal, state, and special district regulations will apply.

Justification:

This use is a wildlife-dependent priority public use and will not diminish the primary purposes of the district, which is to serve as production areas for waterfowl and to provide habitat for migratory birds. This use will meet the mission of the Refuge System by furthering understanding and knowledge of the Nation's migratory bird status, needs, and conservation efforts. Use of WPAs for interpretation will increase the public's appreciation for conservation areas and local efforts, along with providing local schools and communities a look into the natural wildlife heritage of this area prior to settlement.

Signature: District Manager /<name>/ / <date> /
(Signature and Date)

Concurrence: Regional Chief /<name>/ / <date> /
(Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2028

Compatibility Determination

Use: Prescribed Livestock Grazing

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. § 715k–5, Stat. 813).

Funds appropriated under the Wetlands Loan Act are merged with Duck Stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 U.S.C. § 715, 715d–715r).

Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

Limited removal of grass and forb vegetation by domestic livestock, chiefly cattle, but potentially including other domestic livestock to improve grassland vigor and health. Prescribed controlled grazing is recognized as a valuable tool to remove standing vegetation, reduce vegetative litter, and suppress undesirable woody vegetation.

Is the use a proposed new use or an existing use?
Proposed new use.

Is the use a priority public use?
No.

Where would the use be conducted?
Across the district, as necessary for management .

When would the use be conducted?
Grazing may take place anytime from April through November. Most commonly, the grazing will be of high intensity and short-term duration, for example, 200 yearlings for one month on 40 acres. There will be three typical seasons of use:

1. Early spring (mid-April to late May) on native prairie or seeded native grasses designed to reduce the vigor of exotic species and increase the vigor of native species.
2. Summer grazing (July 15 to September 1) may be used, especially on non-native grasslands, to stimulate the grassland after the peak nesting season yet allow vegetative regrowth in the fall.
3. Fall grazing (September 1 to October 31) will be designed to have effects similar to spring grazing, mostly on native prairie remnants or fields seeded with native tallgrass prairie species.

How would the use be conducted?
Fencing and control of livestock will be the responsibility of the cooperating livestock producer. Market rate grazing fees will be required of permittees. Market grazing fees will include typical market deductions for unusual fencing requirements, required cattle movement, or special watering needs. Rates will be assessed in Animal Unit Months (AUM). One AUM is equal to one adult cow for one month (thirty days). One cow/calf pair is equal to 1.20 AUM. Market rates will be determined annually in consultation with the U.S. Department of Agriculture based on prevailing local average grazing rates.

Frequency of grazing on any unit will be based on site-specific plans and availability of other management tools such as prescribed fire and haying. Typically, a unit would be grazed for either one or two years and then would not be grazed for several years, allowing a period of rest. Cooperating livestock producers will be selected by closed bid process, drawing, or the priority system outlined in the U.S. Fish and Wildlife Service Refuge Manual 6 RM 9 (1982).

Why is this use being proposed?
District management tool.

Availability of Resources:

What resources are needed to properly and safely administer use?
Developing grazing agreements and monitoring compliance and biological effects will require some Service resources. Most grazing costs, such as fencing, monitoring herd health, and so on, are assumed by the permittee. Station resources will be used to acquire some unit infrastructure such as boundary fencing and electrical fencing. Some alternative grassland management tools such as prescribed burning, mowing, or haying would be required if grazing is not utilized. Haying has comparable costs to controlled grazing since it also requires administering special use permits. Mowing is more expensive since all costs are assumed by the agency. Prescribed burning is an effective grassland management tool, but staff limitations prevent burning as many acres as is desirable each year. In addition, there is an ecological benefit to rotating grassland management techniques and seasons, such as grazing one year and burning another.

Are existing district resources adequate to properly and safely administer the use?
Yes.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
Grazing by domestic livestock has severe short-term effects on grassland communities. Many of these effects are desirable and are designed to maintain and improve healthy grassland communities. Some of these effects include removing standing vegetation, trampling of other vegetation, and reducing populations of pioneering woody plants. Other effects of grazing are more harmful but generally short-lived.

Grazing in the spring can cause direct loss of grassland bird nests due to trampling and loss of standing vegetation. Grazing at any time of year creates an aesthetic issue of concern; seeing public land being grazed by domestic livestock reduces the appeal of the visit for some visitors. Fortunately, controlled grazing is typically of short duration and does not occur annually on any unit. Grazing livestock can create minor direct disturbance of wildlife, but any harm should be negligible. There is a slight potential for conflict between members of the public and livestock or the permittee, particularly in the autumn when most Waterfowl Production Areas receive their heaviest use. All permittees will be advised that the unit is open to the public for hunting and other recreation. There is a very slight risk of injury to the public caused by livestock. Most visitors who are uncomfortable using property containing livestock are likely to select another unit or another time of year for their visit.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Grazing will not occur more frequently than three out of every five years without the preparation of a site-specific compatibility determination.
2. No insecticides, including insecticidal dusting bags, will be used on WPAs.
3. Control and confinement of the livestock will be the responsibility of the permittee.

Justification:

Prescribed controlled grazing by domestic livestock will not materially interfere with or detract from the purposes for which the units were established. Limited livestock grazing creates temporary disturbances to vegetation of which many are desirable for grassland management. Grazing produces an undesirable but short-term impact to grassland bird nesting and site

aesthetics. Prescribed controlled grazing is an alternative management tool that can be used to replace or complement prescribed burning, mowing, or haying on grasslands. Without occasional disturbance caused by mowing, haying, burning, or grazing, the health of the grassland community would decline, as would the potential for waterfowl production.

Signature: District Manager /<name>/ _____/ <date> /
(Signature and Date)

Concurrence: Regional Chief /<name>/ _____/ <date> /
(Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2023

Compatibility Determination

Use: Photography (includes creative nature writing and art)

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. § 715k–5, Stat. 813).

Funds appropriated under the Wetlands Loan Act are merged with Duck Stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 U.S.C. § 715, 715d–715r).

Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

Year round general public access to Waterfowl Production Areas (WPAs) to photograph, write creatively about, or draw/paint nature and its associated flora and fauna. Access for photography, creative nature writing and art will allow for public enjoyment of an array of wildlife and plant species including waterfowl, grassland birds, resident mammals, tallgrass prairie, and wetland plants. WPAs provide the public with a view into the past of landscapes that early Iowa pioneers and Native Americans saw.

Is the use a proposed new use or an existing use?
Proposed new use.

Is the use a priority public use?
Yes.

Where would the use be conducted?
All open WPAs. Allowable access to the WPAs includes hiking, snowshoeing, cross-country skiing, and non-motorized boating. Limited motorized and bicycle access for this use will be allowed in designated parking areas, and open designated routes of travel. Entry on all or portions of WPAs may be suspended, by posting, upon occasion of unusual or critical conditions affecting land, water, vegetation, wildlife populations, or public safety.

When would the use be conducted?
Year round. The frequency is expected to be irregular, the large size of the district is expected to spread out users, so the intensity of use is expected to be minor as well.

How would the use be conducted?
Typically individuals or small groups on foot either moving through a WPA or sitting at a location of interest for a longer period to capture the flora, fauna, or scenery. Artist's easels, camera tripods, cameras, sketchpads, notebooks, or other small and minor equipment may be used to facilitate the use.

Why is this use being proposed?
Priority public use and public request.

Availability of Resources:

What resources are needed to properly and safely administer use?
Photography, creative nature writing, and art require little to no additional resources. Since WPAs have been open by regulation to hunting, fishing, and trapping, infrastructure is in place for public use. Parking areas and regulatory signs are present at most WPAs. The Iowa Department of Natural Resources (DNR) assumes most management and maintenance responsibilities of the WPAs in the district though a Memorandum of Understanding. Iowa DNR conservation officers provide the primary enforcement of the public use regulations. Updated brochures would need to be developed for each of the Iowa DNR's six geographic units within the WMD. The Service also provides some law enforcement support; however, it is lacking a dedicated officer to the WMD. Assistance from the zone law enforcement officer in Prairie City, Iowa has been utilized in the past. It is not anticipated that this use will entail any greater enforcement issues than what currently exist.

Are existing district resources adequate to properly and safely administer the use?
Yes.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
Photography, creative nature writing, and art pose minimal impact on the purpose for which WPAs were established. Access is typically by individual or small groups on foot. Damage to habitat by foot traffic is minimal and temporary. There may be some temporary disturbance to wildlife due to human activity on the ground. The most likely impact to breeding waterfowl would be during the spring and early summer nesting and brood rearing period; however, the expected sporadic and limited use by the public should not create unreasonable impacts. Disturbance to wildlife, such as flushing a nesting bird, is inherent to these activities; however, the disturbance is temporary and generally not malicious. Many WPAs are located in sparsely populated rural areas, compared to a few that are located near highly populated areas.

Monitoring of this use will be needed to insure anticipated impacts are not exceeded. Winter activities pose no impacts to nesting waterfowl and little impact to vegetation. The winter disturbance to resident wildlife would be temporary and minor.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations*

***According to state regulations Iowa Code 52.1(3) *Waterfowl refuges*.** "The following areas under the jurisdiction of the department of natural resources are established as waterfowl refuges where posted. It shall be unlawful to hunt ducks and geese on the following areas, where posted, at any time during the year. It shall be unlawful to trespass in any manner on the following areas, where posted, during the dates posted, both dates inclusive . . . " **This compatibility determination does not apply to at least some portion of the following WPAs: Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties).**

Stipulations Necessary to Ensure Compatibility:

1. Certain modes of access such as motorized vehicles and bicycles are limited to designated trails, public roads, and parking lots. All watercraft are restricted to no larger than 15 horsepower motors.
2. Camping, overnight use, and fires are prohibited.
3. No photo or viewing blinds may be left overnight.
4. Harassment of wildlife including hazing and calling at birds and other wildlife is prohibited.
5. All applicable federal, state, and special district regulations apply.

Justification:

Photography, creative nature writing, and art will not materially interfere with or detract from the district purposes, including waterfowl production. The level of use for photography, creative writing, and art is moderate on most WPAs. The associated disturbance to wildlife is temporary and minor. Photography is a priority public use and inspires visitors with the joys of abundant wildlife and wild lands. These uses also help fulfill the mission of the Refuge System. Those WPAs with increased activities generally have facilities present to accommodate the public use with minor impacts to the habitat.

Signature: District Manager /<name>/ / <date> /
(Signature and Date)

Concurrence: Regional Chief /<name>/ / <date> /
(Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2028

Compatibility Determination

Use: Recreational Fishing in Accordance with State Regulations (includes motorboat use)

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. § 715k–5, Stat. 813).

Funds appropriated under the Wetlands Loan Act are merged with Duck Stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 U.S.C. § 715, 715d–715r).

Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

Recreational fishing on Waterfowl Production Areas (WPAs) throughout the district in accordance with State of Iowa regulations. Fishing on WPAs may be suspended due to unusual or critical conditions affecting land, water, vegetation, or wildlife populations. Fishing will facilitate four other priority public uses: wildlife observation, wildlife photography, environmental education, and interpretation.

Is the use a proposed new use or an existing use?
Existing use.

Is the use a priority public use?
Yes.

Where would the use be conducted?
Although the entire wetland acreage is open to recreational fishing only about one percent of the wetlands provide water deep enough to support viable fisheries. The few WPAs with viable

fisheries are generally connected to adjacent streams or lakes, located off Service property, and aquatic species move between these bodies of water.

When would the use be conducted?
Year round. The frequency is expected to be irregular, the large size of the district is expected to spread out users, so the intensity of use is expected to be minor as well.

How would the use be conducted?
The State of Iowa uses recreational fishing to help maintain healthy populations of these species. Some WPAs have trails necessary to gain access from public roads and for safety reasons in high traffic areas; parking lots, usually less than one acre in size, may exist.

Why is this use being proposed?
Priority public use, regulation, and fish management.

Availability of Resources:

What resources are needed to properly and safely administer use?
Few additional fiscal resources are necessary to conduct this use. WPAs are open by statue to hunting, fishing, and trapping and have provided such opportunities since acquired. As a result, some infrastructure, such as parking lots, signs, etc., is already in place to facilitate this use. The majority of the WPAs in the district are managed cooperatively through a Memorandum of Understanding with the Iowa Department of Natural Resources (DNR), which includes some law enforcement and facility management responsibilities. Currently, Iowa DNR staff of conservation officers and local wildlife biologist are adequate to support this public use; however, some staff time will be needed to develop and maintain a brochure for fishing in the district.

Are existing district resources adequate to properly and safely administer the use?
Yes.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
Recreational fishing activities may cause brief disturbance to migratory birds and other wildlife using WPAs, which may temporarily displace individual animals to other parts of the WPA. However, this brief disturbance will be limited in scope due to the small number of WPAs with viable fisheries, limited access to fishing (mainly by foot travel), and lack of boat launching facilities. Recreational fishing at anticipated levels and on small areas of relatively few WPAs should not materially interfere with the district's purpose. Recreational fishing will promote understanding and appreciation of natural resources and their management on all land included in the Refuge System.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations*

***According to state regulations Iowa Code 52.1(3) *Waterfowl refuges*.** "The following areas under the jurisdiction of the department of natural resources are established as waterfowl refuges where posted. It shall be unlawful to hunt ducks and geese on the following areas, where posted, at any time during the year. It shall be unlawful to trespass in any manner on the following areas, where posted, during the dates posted, both dates inclusive . . . " **This compatibility determination does not apply to at least some portion of the following WPAs: Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties).**

Stipulations Necessary to Ensure Compatibility:

1. Travel off designated routes and parking areas is prohibited, except as stipulated in a special use permit; travel by horse is not permissible.
2. All watercraft are restricted to no larger than 15 horsepower motors.
3. All applicable federal, state, and special district regulations apply.

Justification:

WPAs are open to fishing by regulation. Fishing will not materially interfere with or detract from the purposes for which these units were established. Fishing is a priority public use and will facilitate four other priority public uses: wildlife observation, wildlife photography, environmental education, and interpretation. The use of fishing will assist in meeting the mission of the Refuge System by facilitating the management of the Nation's wildlife and plant resources for the benefit of the American public.

Signature: District Manager /<name>/ _____ / <date> / _____
(Signature and Date)

Concurrence: Regional Chief /<name>/ _____ / <date> / _____
(Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2028

Compatibility Determination

Use: Recreational Trapping in Accordance with State Regulations (includes motorboat use)

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. § 715k–5, Stat. 813).

Funds appropriated under the Wetlands Loan Act are merged with Duck Stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 U.S.C. § 715, 715d–715r).

Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

Trapping of furbearers is a consumptive public use of Waterfowl Production Areas (WPAs) in the Iowa WMD. Furbearer trapping in the State of Iowa continues to be a popular public use but tends to fluctuate with the fur prices. WPAs are open to trapping as authorized by the Code of Federal Regulations which states, "Lands acquired as 'waterfowl production areas' shall be open to public trapping without federal permit . . . " (50 CFR Ch. 1 (10-1-12 Edition) Part 31, Subpart B, Section 31.16). Trappers are required to comply with Iowa State trapping laws and regulations. A copy of the current Iowa Trapping Regulations may be viewed at www.iowadnr.gov. Furbearer trapping for most species occurs from early November through the end of January, with the exception of spring beaver trapping, which is open through mid-April. According to the Iowa DNR's 2012 *Furbearers Report*, the most numerous mammal species trapped in Iowa is the raccoon with 236,943 harvested during the 2010–2011 season. The second most popular furbearer trapped in Iowa is the muskrat with a total 2010–2011 season harvest of 98,079 (Iowa Department of Natural Resources [DNR], 2012). Both of these species occur on most WPAs within the district.

Is the use a proposed new use or an existing use?
Existing use.

Is the use a priority public use?
No.

Where would the use be conducted?
All open WPAs; the majority of the trapping activity on WPAs concentrates around wetland areas.

When would the use be conducted?
Trapping seasons for most of the Iowa furbearers run from November through the end of January. Beaver trapping season runs from November through the middle of April most years. With the exception of the early spring beaver trapping, most of the trapping use occurs during the late fall and winter months. Trap tending typically occurs during daylight hours; however, state regulations do not restrict trap-tending times.

How would the use be conducted?
Trappers may use leg hold traps, snares, "body gripping Conibear" style, and live box traps. Iowa DNR sets regulations for trap dimensions and set locations for the various permitted trap types These regulations are contained in Iowa Code 481a and 483a and are available in the *Iowa Hunting and Trapping Regulations* guide at www.iowadnr.gov. Access for trappers using WPAs is primarily by foot; however, they also may use snowshoes or cross-country skis. Some WPAs contain large enough waterways to allow use of both motorized and non-motorized boat use for trapping. Travel onto WPAs using wheeled motorized vehicles such as ATVs, trucks and passenger vehicles, and motorcycles is restricted to parking areas and designated open roads. The majority of trappers will access the WPAs by foot and park their vehicles in the parking areas.

Why is this use being proposed?
Regulation and wildlife management.

Availability of Resources:

What resources are needed to properly and safely administer use?
Few additional fiscal resources are necessary to conduct this use. WPAs are open by statue to hunting, fishing, and trapping and have provided such opportunities since acquired. As a result, some infrastructure is already in place to facilitate this use. The majority of the WPAs in the district are managed cooperatively through a Memorandum of Understanding with the Iowa DNR, which includes some law enforcement responsibilities. Currently, the Iowa DNR staff of conservation officers is adequate to support this public use.

Are existing district resources adequate to properly and safely administer the use?
Yes.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
Recreational trapping can potentially affect the waterfowl production of WPAs both directly and indirectly. Direct impacts may include such effects as killing or displacing of waterfowl during the pair bonding/nesting season or destruction of nest by trampling. Indirect impacts may include catch of target and not-target species that are predators on waterfowl and/or nests or removal of species that induce habitat change (i.e., beaver and muskrat). Impacts, either direct or indirect, may be positive, neutral, or negative.

With the exception of beaver season (November to April 15), all the other trapping seasons are during periods that will not negatively affect waterfowl production. Beaver trappers will be checking traps daily during the pair bonding and early nest cycle. These disturbances are temporary and generally of short duration. Most of the impacts from this use will be during the fall migration time. The greatest impact times will be during the trap-setting phase; however, this is still short and temporary. Trap line checks are required daily and represent a frequent but short-lived disturbance.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations*

***According to state regulations Iowa Code 52.1(3) *Waterfowl refuges*.** "The following areas under the jurisdiction of the department of natural resources are established as waterfowl refuges where posted. It shall be unlawful to hunt ducks and geese on the following areas, where posted, at any time during the year. It shall be unlawful to trespass in any manner on the following areas, where posted, during the dates posted, both dates inclusive . . . " **This compatibility determination does not apply to at least some portion of the following WPAs: Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties).**

Stipulations Necessary to Ensure Compatibility:

1. Travel in or use of any motorized or other vehicle is prohibited except by special use permit. Parking in designated areas or on public roads is permissible for access, but use of horses is not permissible.
2. Traps must be attended and tagged by the owner in accordance with State of Iowa trapping regulations. Traps and personal property may not be left unattended or abandoned.
3. All watercraft are restricted to no larger than 15 horsepower motors.

4. All applicable federal, state, and special district regulations apply.

Justification:

Most trapping use occurs outside the time for pair bonding, nesting, and brood rearing (waterfowl production), so this use will have little to no direct impact on waterfowl production. Spring beaver trapping is the one exception. Its impact, however, would be temporary and isolated due to the short duration of the visits, small number of waterfowl involved, and the limited geographic area impacted by the presence of one or a few individuals. These impacts on waterfowl production and the WMD mission are negligible.

Most species of interest to trappers and common "non-target" catches such as skunks and free-ranging house cats are predators on waterfowl at some point in the production cycle. Management of red fox, raccoon, mink, opossum, and skunk populations through a regulated trapping program is, at worst, a neutral impact and likely a positive. Due to edge effects and concentrations of nesting waterfowl, the impacts of predator management are likely inversely related to WPA size. The average size of WPAs in the Iowa WMD is 100 acres. In these small parcels, the effects of only a few individual predators can be highly significant on waterfowl production in the local area. Timing of removal of predators also affects the impact that this activity has on waterfowl production. Again, depending on the time of year, impacts on waterfowl production may be neutral or positive. The harvest through the trapping program of other species such as those permitted by state regulations (coyote, muskrat, badger, beaver, otter, and bobcat) that may or may not be predators of waterfowl is insignificant.

Waterfowl production is also impacted by the natural habits of beaver and muskrat populations. Upon initial analysis, it is often thought that beaver and their wetland construction activities and muskrat with their propensity to maintain open water are beneficial to waterfowl production. In exceptionally large marshes and in pre-settlement times, this was likely the case. However, the landscape of the district has been so altered through agricultural conversion that few ecosystem functions remain intact. Current hydrologic function resembles very little of that from pre-settlement. Dikes, levees, roads, culverts, tile lines, pumps, and water control structures work to move and confine water with calculated purpose. Ramifications of disruption to this system can include private property damage, public safety hazards, disgruntled neighbors, and legal liability. As a result, the Service and Iowa DNR manage wetlands in WPAs through manipulating water levels, providing for the needs and stages of target waterfowl. Left unchecked, beaver activity results in disruption to the water flow when culverts and other water control structures are blocked. High muskrat populations are detrimental to levees and dikes as individuals burrow into these structures and compromise the structural integrity. Without the ability to control water levels, the waterfowl production purpose of the district would suffer, as would the Refuge System mission.

A public trapping program facilitates management of beaver and muskrat populations at such levels that the many benefits created of these species are realized, yet the ability of the district to manage water levels is not compromised. According to the Iowa DNR's 2012 *Furbearer's Report* for Iowa on a statewide level, beaver harvest has depended on the weather and conditions and fluctuating fur prices. Total Iowa beaver harvest during the 2010–2011 trapping season was 5,382 (Iowa DNR, 2012). Muskrat harvest in Iowa has also tends to fluctuate with fur prices and populations.

Overall trapping is a minor public use of WPAs but is an important management tool in localized areas. Trapping on WPAs will provide the public the opportunity to assist the WMD with furbearer management. Consistent with the mission for the Refuge, trapping on WPAs results in management of populations and is not a "control program" intending to eliminate components of the ecosystem for the benefit of others. Data from the Iowa DNR on trapping indicate that the current level of furbearer harvest is not resulting in harm to these populations. The public trapping program as managed by state regulations does not materially interfere with or detract from the Service's ability to meet the district's purpose of waterfowl production or the mission of the Refuge System.

Signature: District Manager /<name>/ / <date> /
(Signature and Date)

Concurrence: Regional Chief /<name>/ / <date> /
(Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2023

Compatibility Determination

Use: Wildlife Observation

Refuge/District Name: Iowa Wetland Management District

Establishing and Acquisition Authorities:

Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp), March 16 1934, (16 U.S.C. § 718–718h, 48 Stat. 452) as amended August 1, 1958, (P.L. 85–585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Wetlands Loan Act, October 4, 1961, as amended (16 U.S.C. § 715k–5, Stat. 813).

Funds appropriated under the Wetlands Loan Act are merged with Duck Stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 U.S.C. § 715, 715d–715r).

Refuge/District Purposes:

Iowa Wetland Management District was established in 1979:

" . . . as Waterfowl Production Areas subject to . . . all of the provisions of such Act [Migratory Bird Conservation Act of 1929] . . . except the inviolate sanctuary provisions . . . " 16 U.S.C. § 718(c) " . . . for any other management purpose, for migratory birds." 16 U.S.C. § 715d

National Wildlife Refuge System Mission:

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

Visitors observing wildlife. This can instill an appreciation for the value of and need for fish and wildlife habitat conservation. Access for wildlife observation will allow for public enjoyment of an array of wildlife and plant species including waterfowl, grassland birds, resident mammals, tallgrass prairie, and wetland plants. Waterfowl Production Areas (WPAs) provide the public with a view into the past of landscapes that early Iowa pioneers and Native Americans saw.

Is the use a proposed new use or an existing use?
Proposed new use.

Is the use a priority public use?
Yes.

Where would the use be conducted?
All open WPAs, entry on all or portions of WPAs may be suspended, by posting, upon occasion of unusual or critical conditions affecting land, water, vegetation, wildlife populations, or public

safety. Certain modes of transportation for wildlife viewing will be limited to designated roads, trials, and parking lots.

When would the use be conducted?
Year round.

How would the use be conducted?
Allowable access to the WPAs includes hiking, snowshoeing, cross-country skiing, and non-motorized boating. Limited motorized and bicycle access for this use will be allowed in designated parking area, and open designated routes of travel.

Why is this use being proposed?
Priority public use.

Availability of Resources:

What resources are needed to properly and safely administer use?
Wildlife observation requires little to no additional resources. Since WPAs have been open by regulation to hunting, fishing and trapping, infrastructure is in place for public use. Parking areas and regulatory signs are present at most WPAs. The Iowa Department of Natural Resources (DNR) assumes most management and maintenance responsibilities of the WPAs in the district though a Memorandum of Understanding. Iowa DNR conservation officers provide the primary enforcement of the public use regulations. Updated brochures would need to be developed for each of the Iowa DNR's six geographic units within the WMD. The Service also provides some law enforcement support; however, it is lacking a dedicated officer to the WMD. Assistance from the zone law enforcement officer in Prairie City, Iowa has been utilized in the past. It is not anticipated that this use will entail any greater enforcement issues than what currently exist.

Are existing district resources adequate to properly and safely administer the use?
Yes.

Anticipated Impacts of the Use:

How does the use affect district purposes, the Refuge System mission, and district goals and/or objectives?
Wildlife observation poses minimal impact on the purpose for which WPAs were established. Access is typically by individual or small groups on foot. Damage to habitat by foot traffic is minimal and temporary. There may be some temporary disturbance to wildlife due to human activity on the ground. The most likely impact to breeding waterfowl would be during the spring and early summer nesting and brood rearing period; however, the expected sporadic and limited use by the public should not create unreasonable impacts. Disturbance to wildlife, such as flushing a nesting bird, is inherent to these activities; however, the disturbance is temporary and generally not malicious. Many WPAs are located in sparsely populated rural areas, compared to a few that are located near highly populated areas. Monitoring of this use will be needed to insure anticipated impacts are not exceeded. Winter activities pose no impacts to nesting waterfowl and little impact to vegetation. The winter disturbance to resident wildlife would be temporary and minor.

Public Review and Comment:

This compatibility determination is available for public review as part of the *Iowa WMD Environmental Assessment and Draft Comprehensive Conservation Plan* from Monday, August 19th, 2013 to Tuesday, September 17th, 2013. Comments received and agency responses are included in the final Iowa WMD Comprehensive Conservation Plan.

Determination:

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations*

***According to state regulations Iowa Code 52.1(3) *Waterfowl refuges*.** "The following areas under the jurisdiction of the department of natural resources are established as waterfowl refuges where posted. It shall be unlawful to hunt ducks and geese on the following areas, where posted, at any time during the year. It shall be unlawful to trespass in any manner on the following areas, where posted, during the dates posted, both dates inclusive . . . " **This compatibility determination does not apply to at least some portion of the following WPAs: Jemmerson Slough (Dickinson County), Elk Creek Marsh (Worth County), and Rice Lake (Winnebago and Worth Counties).**

Stipulations Necessary to Ensure Compatibility:

1. Certain modes of access such as motorized vehicles and bicycles are limited to designated trails, public roads, and parking lots. Non-motorized boats are permitted with the exception of state designated waterfowl refuge sites (see above).
2. Camping, overnight use, and fires are prohibited.
3. No photo or viewing blinds may be left overnight.
4. Harassment of wildlife including hazing and calling at birds and other wildlife is prohibited.
5. All applicable federal, state, and special district regulations apply.

Justification:

Wildlife observation will not materially interfere with or detract from the district purposes, including waterfowl production. The level of use for wildlife observation is moderate on most WPAs. The associated disturbance to wildlife is temporary and minor. Wildlife observation is a priority public use and inspires visitors with the joys of abundant wildlife and wild lands. These uses also help fulfill the mission of the Refuge System. Those WPAs with increased activities generally have facilities present to accommodate the public use with minor impacts to the habitat.

Signature: District Manager /<name>/ / <date> /
(Signature and Date)

Concurrence: Regional Chief /<name>/ / <date> /
(Signature and Date)

Mandatory 10- or 15-year Re-evaluation Date: 2028

Appendix H: List of Preparers and Contributors

Preparers

The following individuals were members of the core planning team, instrumental in the development of this document, and/or made major contributions throughout the planning process.

Iowa Wetland Management District Staff

Tim Miller, Project Leader

Erich Gilbert, Deputy Project Leader

Tom Skilling, Wildlife Biologist

Anne Szelag, Administrative Technician

AnnMarie Krmpotich, Wildlife Biologist (Partners Program)

Iowa Department of Natural Resources

Mark Gulick, Northwest District Supervisor

Rick Trine, Central District Supervisor (retired during the planning process)

Jeff Joens, Central Office Executive Officer

Northwest District Biologists and Technicians

Central District Biologists and Technicians

FWS Branch of Conservation Planning Staff, Region 3

Connie Rose, Biologist Planner

Gabe DeAlessio, GIS Specialist

Mark Hogeboom, Writer/Editor

Contributors

The following individuals also provided guidance, contributions, and support to the Environmental Assessment and Draft Comprehensive Conservation Plan:

FWS Regional Office Staff, Region 3

Matt Sprenger, Area 2 Refuge Program Supervisor (relocated during planning process)

Josh Eash, Regional Hydrologist

Patricia Heglund, Regional Biologist

James Myster, Regional Archaeologist

Maggie O'Connell, Chief, Visitor Services Branch

Rick Speer, Refuge Program Specialist

Jim Leach, Area 3 Refuge Program Supervisor, and Jason Goldberg, Acting Area 2 Refuge Program Supervisor, provided comments during internal review.

FWS Partners for Fish and Wildlife Staff

Doug Helmers, State Private Lands Coordinator, Iowa Private Lands Office

Academia

Steve Dinsmore, Professor, Natural Resource Ecology and Management, Iowa State University

Susan Galatowitsch, Professor of Horticultural Science, University of Minnesota (Twin Cities)

Daryl Smith, Director and Professor Tallgrass Prairie Center, University of Northern Iowa

Appendix I: Communications

In this appendix:

The following groups and individuals were contacted to solicit their involvement throughout the planning process:

U.S. Fish and Wildlife Service

Regional planning chiefs and other planners as requested

National planning coordinator

National Conservation Training Center librarian

Tribes

Flandreau Santee Sioux Tribe

Lower Sioux Indian Community of Minnesota

Prairie Island Indian Community of Minnesota

Sac and Fox Tribe of the Mississippi in Iowa

Santee Sioux Nation

Sisseton-Wahpeton Oyate

Spirit Lake Sioux Tribe

Upper Sioux Community of Minnesota

Individuals

District cooperative farmers

Other general public as requested

Media

All Iowa and Minnesota media on file with the U.S. Fish and Wildlife were contacted at various times throughout the planning process.

Congressional Officials

Kevin McCarthy	Daniel Muhlbauer	Jo Oldson	Pat Ward
Helen Miller	Daryl Beall	John Kibbe	Peter Cownie
Beth Wessel-Kroeschell	Dave Deyoe	John Wittneben	Ralph Watts
Henry Rayhons	David Tjepkes	Josh Byrnes	Rick Olson
Ako Abdul-Samad	David Johnson	Julian Garrett	Robert Bacon
Amanda Ragan	Dennis Black	Kent Sorenson	Royd Chambers
Annette Sweeney	Dick Dearden	Kevin Koester	Ruth Ann Gaines
Bill Anderson	Erik Helland	Kim Pearson	Scott Raecker
Bill Dix	Gary Worthan	Lance Horbach	Sharon Steckman
Brad Zaun	Herman Quirmbach	Linda Upmemer	Steve Sodders
Bruce Hunter	Jack Hatch	Lisa Heddens	Steve Kettering
Chip Baltimore	Jack Whitver	Mark Smith	Stewart Iverson
Chris Hagenow	James VanEngelenhoven	Mathew McCoy	Tim Kapucian
Clel Baudler	Janet Petersen	Merlin Bartz	Tom Shaw
Daniel Huseman	Jeff Smith	Nancy Boettger	
Daniel Kelley	Jerry Behn	Pat Grassley	

Organizations

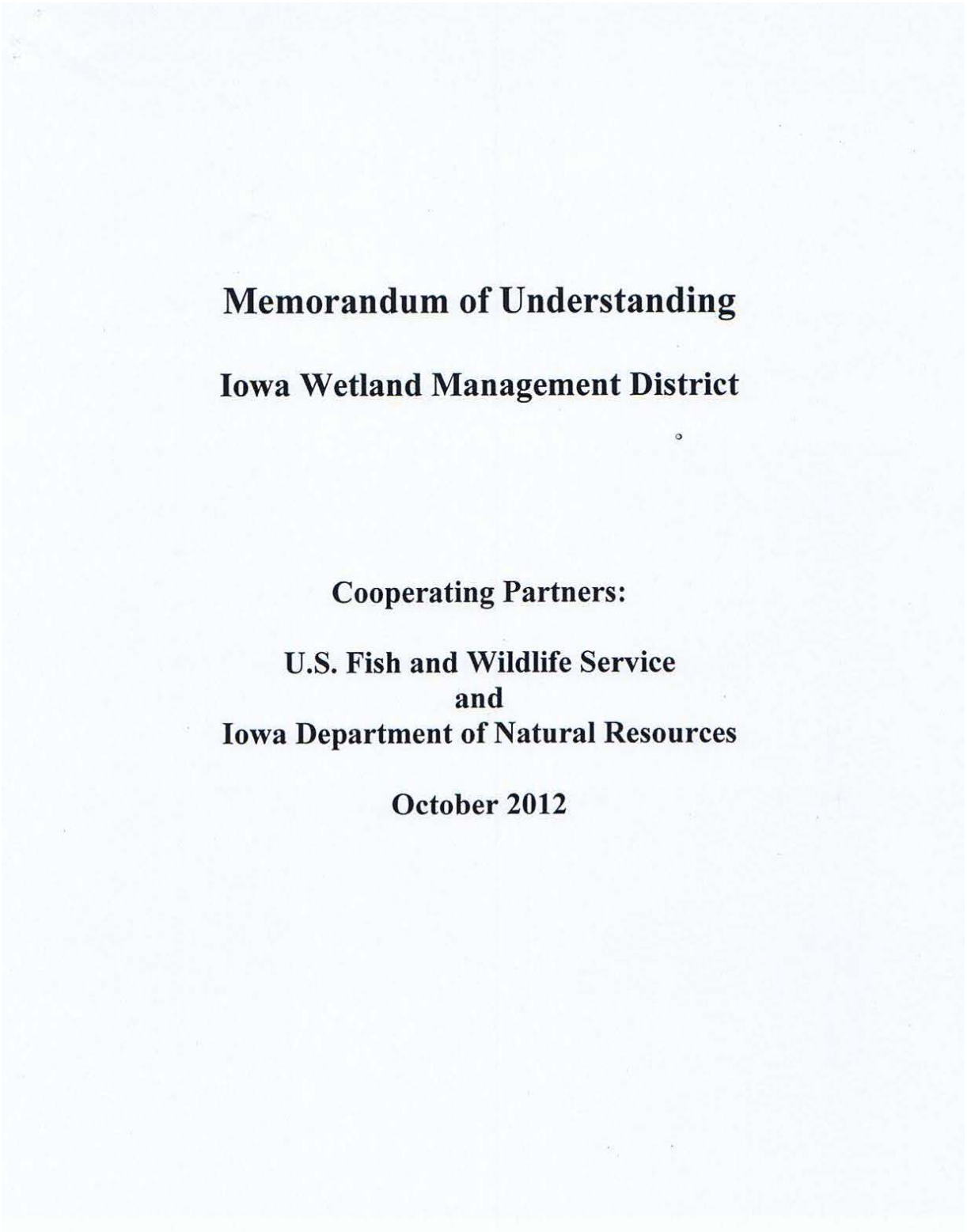
Northwestern University - Environmental Policy And Culture	Calhoun County Board Of Supervisors	Floyd County Conservation Board (CCB)	Iowa Lakes Regional Water	Pocahontas County Board Of Supervisors	Marshall County Farm Service Agency
National Wildlife Refuge Association	Calhoun CCB	Franklin County Board Of Supervisors	Iowa Pork Producers	Pocahontas CCB	Algona Service Center
PEER Refuge Keeper	Carroll County Board Of Supervisors	Franklin CCB	Iowa Soybean Association	Polk County Board Of Supervisors	Humboldt Service Center And Humboldt Soil and Water Conservation District (SWCD)

Defenders Of Wildlife	Carroll CCB	Greene County Board Of Supervisors	Iowa Turkey Federation	Polk CCB	Kossuth County Farm Service Agency
Wilderness Watch	Center Lake Improvement & Preservation Association	Greene CCB	Jasper County Board Of Supervisors	Sac County Board Of Supervisors	Cerro Gordo County Farm Service Agency
National Trappers Association, Inc.	Cerro Gordo County Board Of Supervisors	Grundy County Board Of Supervisors	Jasper CCB	Sac CCB	Adel Service Center And Dallas SWCD
The Wilderness Society	Cerro Gordo CCB	Grundy CCB	Kossuth County Board Of Supervisors	Spirit Lake Protective Association	Butler County Farm Service Agency
The Humane Society Of The United States	Cherokee County Board Of Supervisors	Guthrie County Board Of Supervisors	Kossuth CCB	Story County Board Of Supervisors	Northwood Service Center
National Wildlife Federation	Cherokee CCB	Guthrie CCB	Marshall County Board Of Supervisors	Story CCB	Thompson Service Center And Winnebago SWCD
Sierra Club – Midwest Office	Clay County Board Of Supervisors	Hamilton County Board Of Supervisors	Marshall CCB	Webster County Board Of Supervisors	Iowa Native Plant Society
The Conservation Fund	Clay CCB	Hamilton CCB	Mitchell County Board Of Supervisors	Webster CCB	Wessling Ag. Inc.
Colleen Hovinga, Friends Of Union Slough NWR	Dallas County Board Of Supervisors	Hancock County Board Of Supervisors	Mitchell CCB	Winnebago County Board Of Supervisors	Dallas County Farm Service Agency
Audubon Society Of The District Of Columbia	Dallas CCB	Hancock CCB	O'Brien County Board Of Supervisors	Winnebago CCB	Estherville Service Center
Boone County Board Of Supervisors	Dickinson County Board Of Supervisors	Hardin County Board Of Supervisors	O'Brien CCB	Worth County Board Of Supervisors	Spirit Lake Service Center And Dickinson SWCD
Boone CCB	Dickinson CCB	Hardin CCB	Okoboji Protective Association	Worth CCB	Storm Lake Service Center And Buena Vista SWCD

Buena Vista County Board Of Supervisors	East Okoboji Lakes Improvement Corporation	Horizon Wind Farms, Upper Midwest Regional Office	Osceola County Board Of Supervisors	Wright County Board Of Supervisors	Carroll Service Center
Buena Vista CCB	Emmet County Board Of Supervisors	Humboldt County Board Of Supervisors	Osceola CCB	Wright CCB	Clarion Service Center And Wright SWCD
Butler County Board Of Supervisors	Emmet CCB	Humboldt CCB	Palo Alto County Board Of Supervisors	Xenia Rural Water	Iowa Trappers Association
Butler CCB	Floyd County Board Of Supervisors	Iowa Corn Growers Association	Palo Alto CCB	Story Soil And Water Conservation District	Newton Service Center And Jasper SWCD
Polk County Farm Service Agency	Iowa Falls Service Center And Hardin SWCD	R.S. Stover Company	Hamilton Soil And Water Conservation District	Webster City Service Center	Webster Soil And Water Conservation District
Marshalltown Service Center And Marshall SWCD	Humboldt County Farm Service Agency	Boone Service Center, NRCS	Calhoun County Farm Service Agency	Hardin County Farm Service Agency	Dickinson County Clean Water Alliance
Nevada Service Center	Webster County Farm Service Agency	Greene County Farm Service Agency	Iowa Cattlemen's Association	Primghar Service Center And O'Brien SWCD	Izaak Walton League, Oakdale Chapter
Guthrie County Farm Service Agency	Iowa Prairie Network	Ducks Unlimited	Osage Service Center	Arco Dehydrating	Grundy County Farm Service Agency
Hancock County Farm Service Agency	Garner Service Center And Hancock SWCD	Rockwell City Service Center	Ankeny Service Center And Polk SWCD	Franklin County Farm Service Agency	Iowa Natural Heritage Foundation
Izaak Walton League, Rice Lake Chapter	Guthrie Center Service Center And Guthrie SWCD	Sac City Service Center	Iowa Ornithologists Union	Osceola County Farm Service Agency	Story County Farm Service Agency
Emmetsburg Service Center And Palo Alto SWCD	Boone Soil And Water Conservation District	Pocahontas Service Center And Pocahontas SWCD	Pocahontas County Farm Service Agency	Jasper County Farm Service Agency	Cerro Gordo Soil And Water Conservation District

Spencer Service Center And Clay SWCD	Worth Soil And Water Conservation District	Dickinson County Farm Service Agency	PMB Farms	Wright County Farm Service Agency	Izaak Walton League, Boone Valley Chapter
Charles City Service Center And Floyd SWCD	Pheasants Forever And Quails Forever	Allison Service Center And Butler SWCD	Creating Great Places	M&M Divide RC&D	Kossuth CCB
Fort Dodge Service Center	Sac County Farm Service Agency	Hampton Service Center And Franklin SWCD	Iowa Bowhunters Association	White Rock Conservancy	Izaak Walton League, Emmet County Chapter
Sac Soil And Water Conservation District	Floyd County Farm Service Agency	Boone County Farm Service Agency	Izaak Walton League, Floyd County Chapter	Agren, Inc.	Carroll County Farm Service Agency
Izaak Walton League, Worth County Chapter	Diversity Farms	Clay County Farm Service Agency	Cherokee Service Center And Cherokee SWCD	Hamilton County Farm Service Agency	Emmet Soil And Water Conservation District
Cherokee County Farm Service Agency	Mitchell Soil And Water Conservation District	Izaak Walton League, Dickinson County Chapter	Buena Vista County Farm Service Agency	Waterfowl Association Of Iowa	Grundy Center Service Center
Winnebago County Farm Service Agency	Saving Our Avian Resources	Palo Alto County Farm Service Agency	Izaak Walton League, East Fork Chapter	Mason City Service Center	Jefferson Service Center And Greene SWCD
Ducks Unlimited	Osceola Soil And Water Conservation District	Emmet County Farm Service Agency	Izaak Walton League, Marshall County Chapter	Calhoun Soil And Water Conservation District	O Brien County Farm Service Agency
Mitchell County Farm Service Agency	Sibley Service Center	Iowa Environmental Council	Grundy Soil And Water Conservation District	Carroll Soil And Water Conservation District	Worth County Farm Service Agency
Kossuth Soil And Water Conservation District	Iowa Department of Natural Resources				

Appendix J: Memorandum of Understanding with Iowa Department of Natural Resources



Memorandum of Understanding

Iowa Wetland Management District

Cooperating Partners:

U.S. Fish and Wildlife Service
and
Iowa Department of Natural Resources

October 2012

MEMORANDUM OF UNDERSTANDING

Iowa Department of Natural Resources State of Iowa	Fish and Wildlife Service U.S. Department of Interior

This MEMORANDUM OF UNDERSTANDING, entered into by and between the Iowa Department of Natural Resources, State of Iowa, hereinafter referred to as the Department, under Chapters 107.24 and 107.30, Code of Iowa; and the Fish and Wildlife Service, United States Department of the Interior, hereinafter referred to as the Service, acting by and through the Regional Director, Region 3, under the Authority of the Migratory Bird Conservation Act of February 18, 1929, as amended (16 U.S.C. 715-715r); Migratory Bird Hunting and Conservation Stamp Act of March 16, 1934 (48 Stat. 451), as amended (16 U.S.C. 718 et seq.); Fish and Wildlife Act of August 8, 1956 (708 Stat. 1119), as amended (16 U.S.C. 742a-742j); the Land and Water Conservation Fund Act of 1965 (16 U.S.C. 460 et seq.); the Emergency Wetland Resources Act of 1986 (P.L. 99-645); the National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57); and in accordance with the policy of cooperation with the various states expressed in 43 CFR, part 24.

WHEREAS, the Department has been created under the laws of the State of Iowa to provide an adequate and flexible system for the protection, development, and use of forests, fish and wildlife, lakes, streams, plant life, flowers, and other outdoor resources, and

WHEREAS, the Service has as its responsibility the management of migratory birds and seeks to maintain and increase populations of migratory birds so they may continue to provide recreational and educational benefits for people, and

WHEREAS, the Department has a responsibility for the management of migratory birds and other wildlife within the boundaries of the state of Iowa, and

WHEREAS, the Department and the Service recognize the value of wetlands developed under this agreement to wildlife species other than waterfowl, and

WHEREAS, it is the mutual desire of the Department and the Service to work in harmony for the common purpose of acquiring and managing production habitat in Iowa in order to maintain and increase waterfowl and other migratory bird populations for the best interests of the people of Iowa and the United States.

This MEMORANDUM OF UNDERSTANDING between the Department and the Service supports the goals of the Prairie Pothole Joint Venture, a component of the North American Waterfowl Management Plan. In Iowa, the goals for wetland preservation are to: 1) acquire land through a combination of county, state and federal governments, conservation organizations, private businesses and concerned citizens to protect 100,000 acres, 2) acquire existing or restorable wetlands and adjacent upland nesting habitat at an optimum ratio of one wetland acre per three upland acres within each priority complex, and 3) continue an aggressive wetland restoration program on private land to create new wetland habitat.

The Iowa Department of Natural Resources and The Fish and Wildlife Service Mutually Agree:

1. To cooperate in planning, carrying out, and operating a program to acquire, protect, and manage lands for wetlands preservation and waterfowl production in the state of Iowa for the express purpose of maintaining and increasing the production of waterfowl. These lands will be known as Waterfowl Production Areas (WPAs). This program shall be known as the Iowa Small Wetlands Acquisition Program (Program).

2. To cooperate in identifying communities of waterfowl production habitat in Iowa, and delineate for purchase or easement those lands of high waterfowl production capabilities of said communities. Each wetland community selected for habitat acquisition shall be within the 35 counties identified in the Prairie Pothole Joint Venture Plan.

3. To coordinate activities under this agreement with the Iowa PPJV Implementation Committee.

4. To manage lands acquired under this Program in accordance with the Iowa Wetland Management District (WMD) approved Comprehensive Conservation Plan (CCP) incorporating updated management practices as mutually agreed by both agencies.

5. To abide by the attached Procedural Agreement which has been mutually agreed upon as the document that will guide activities under this Memorandum of Understanding and is attached hereto and made a part of this Memorandum of Understanding.

6. To review annually, the management of lands acquired under this Program, the progress of the Program, and to plan for the future Program direction as appropriate.

7. That each and every provision of this Memorandum of Understanding is subject to the laws of the State of Iowa and the laws of the United States.

8. The Service shall retain primary jurisdiction and be principally responsible for the management of these lands as part of the National Wildlife Refuge System as outlined in the attached Procedural Agreement.

9. That nothing in this Memorandum shall be construed as obligating the Department or the State of Iowa to the expenditure of funds or for the future payment of money in excess of appropriations authorized by law.

10. That nothing in this Memorandum shall be construed as obligating the Service to expend or as involving the United States in any contracts or other obligations for the future payment of money in excess of the appropriations authorized by law.

11. That this Memorandum shall become effective as soon as it is signed by the parties hereto and shall continue in force until terminated by either party upon a thirty (30) day notice upon a date indicated.

12. That amendments to this basic Memorandum of Understanding may be proposed by either party and shall become effective upon approval by both parties.

13. To share the operation and use of equipment and vehicles in the course of cooperative management operations subject to the following special provision:

Each party to this agreement agrees to be responsible for damages to their own property and injuries to their own employees/volunteers, except for damages/injuries resulting from the faulty or negligence of the other party. Any claim for damages to property or persons made against the respective governments will be pursued in accordance with the provision of the respective Tort Claims Acts.

The Fish and Wildlife Service Agrees:

1. To request a minimum of $2 million of the Region's annual migratory bird fund allocation to this Program.

2. To provide the necessary personnel to plan for and carry out the purpose of this Program.

3. To review and approve or disapprove completed land acquisition appraisal reports.

4. To prepare and authorize Statements of Just Compensation, as required by provisions of P.L. 91-646.

5. To take necessary steps to vest title in the United States of land acquired for this Program, and make payment for property so purchased.

6. To make payments for all relocation benefits to displaced persons affected by the acquisition of lands under this Memorandum of Understanding, as required by P.L. 91-646.

7. To conduct cadastral surveys of lands purchased for this Program if required for legal description or relocation of boundary.

8. To complete appropriate use findings and compatibility determinations for uses in accordance with Service policy.

9. To provide Department $250,000 annually for management of WPAs within the Iowa WMD.

The Iowa Department of Natural Resources Agrees:

1. To provide the necessary personnel to plan for and carry out the purpose of this Program.

2. To provide, when requested by the Service, appraisal reports on proposed projects.

3. To negotiate with landowners and obtain purchase agreements on Service forms, to conduct relocation advisory services as required by P.L. 91-646, and to assist the landowners in filing claims for reimbursement of expenses under P.L. 91-646.

4. To obtain necessary state approvals for lands purchased for this Program in accordance with applicable state and federal laws.

5. To forward signed purchase agreements, completed appraisal reports and other documents deemed necessary to the Division of Realty, U.S. Fish and Wildlife Service, Bloomington, Minnesota.

6. To provide information concerning proposed secondary and economic uses to the Service for compatibility determinations.

7. To provide the Service a summary activity report, by WPA, on an annual basis.

In WITNESS WHEREOF, the parties hereto have executed this Memorandum of Understanding as of the date when last signed below.

DEPARTMENT OF NATURAL RESOURCES
STATE OF IOWA

By _____.
Director

Date 10/29/2012.

FISH AND WILDLIFE SERVICE
U.S. DEPARTMENT OF THE INTERIOR

By _____.
Regional Director

Date 11/20/12.

PROCEDURAL AGREEMENT

I. LIAISON AND COORDINATION

The Service Project Leader at Union Slough National Wildlife Refuge, Titonka, IA, is designated as Iowa Wetland Management District (WMD) Coordinator. The Service Project Leader will represent the Service in exercising jurisdiction over the management of Waterfowl Production Areas (WPAs), and provide local assistance to the Department in carrying out the Program. Acquisition, however, shall be coordinated through the Division of Realty, in Bloomington, MN.

The Wildlife Bureau Chief will be the Program Coordinator representing the Department in all matters related to the Memorandum of Understanding and Procedural Agreement.

II. GUIDELINES FOR SELECTING WPAs

Acquisition objectives will be to identify and acquire, in fee title or easement, WPAs with highest priority given to acquiring natural or restorable wetlands having brood-rearing cover and associated upland nesting cover in close proximity to existing public wetlands. Other areas of priority will be uplands in the vicinity of wetlands where nesting cover is lacking.

A. Project areas will be located within the 35 eligible counties listed in the Prairie Pothole Joint Venture Plan. Priority will be given to wetland complexes as delineated in the *Identification of Potential Wetland Complex Restorations in the Prairie Pothole Region of Iowa* (2002). This does not preclude consideration of tracts outside of the delineated areas which may be deemed important focal areas of habitat.

B. WPAs to be acquired will be selected primarily on the basis of their importance to waterfowl and other migratory birds.

C. The upland-nesting component of waterfowl production habitat will be emphasized and situated to complement designated wetlands ideally in a 3:1 ratio of uplands to wetlands within a targeted complex. Whole farm units can be considered. Surplus upland can be exchanged where appropriate.

D. Legal access to the property for the purpose of management and public use is required. This can be either in fee or easement.

E. Creeks and rivers do not qualify as core wetlands for purchase but their presence may enhance the unit.

III. ACQUISITION PROCEDURES

A. Service Division of Realty will maintain a record of all WPA projects and provide updates to the Department on request.

B. Potential projects will be evaluated by Department or Service. Selected project packages containing a Service delineation sheet and other project data will be forwarded to the Department.

C. Department will review and forward selected WPA project packages to the Service Project Leader for review.

D. The Service Project Leader will review packages and forward to Service Division of Realty.

E. Service Division of Realty conducts or contracts for the appraisal. The Service shall have the appraisal reviewed and upon approval, send a Statement of Just Compensation, copy of appraisal and purchase agreement to the Department Realty office for negotiation.

F. Negotiations will be conducted with the intent not to exceed the appraised value. While the Service has authority to accept purchase agreements in excess of the appraised value for WPAs; it rarely does so. In special circumstances, justification to obtain price agreement in excess of appraised value is warranted. Before a WPA agreement for a price exceeding the appraised value is accepted, the Regional Director must approve a statement, for the record, citing the case history of negotiations and the reasons that a higher price is justified. Coordination shall be through the Division of Realty, Bloomington, Minnesota.

G. Federal purchase agreement forms will be used, including Statements of Just Compensation.

H. The value for use and occupancy reservation of less than 2 years duration is not usually discounted. Use reservations, especially for buildings, are permitted for periods not to exceed five years. Any additional tenancies beyond five years, if permitted, will be handled by Special Use Permit executed by the Service Project Leader. Tenancy for Cooperative Farming Agreements shall be administered in accordance with the WMD approved CCP and 50 CFR 29.2 (Cooperative Land Management).

I. Upon Service acceptance of the purchase agreement, a certified letter of acceptance will be sent to the vendor. A copy of the letter of acceptance and a copy of the accepted option and tract maps will be sent to the Department and Service Project Leader. Service Division of Realty (or designee) will conduct necessary acquisition surveys.

J. After transfer of title to the United States, the following documents will be furnished at time of completion to the Department and Service Project Leader.

1. Copy of executed deed.
2. Notification of payment to vendor
3. Title vesting memorandum with copy of final opinion from Solicitor.

K. Department will provide owner/tenants with legal notification of termination of cropping rights per state law at date of closing and Service will notify USDA-FSA of title transfers

IV. COMPREHENSIVE CONSERVATION PLAN (CCP) AND STEP DOWN MANAGEMENT PLAN REQUIREMENTS

Within one year after the Service takes possession of a given tract, a unit plan will be prepared by the Department and Service and will be based on goals and objectives outlined in the WMD CCP and Habitat Management Plan (HMP). The jointly developed unit plan will describe the objectives for management of WPAs in the Iowa WMD and will include objectives for upland habitats, wetland habitats, and public uses.

Objectives will primarily consider migratory waterfowl, other migratory birds, and endangered and threatened species. Public use objectivities will be consistent with those authorized in Title 50 Code of Federal Regulations and National Wildlife Refuge System guidelines. Cultural resources will be managed according to federal regulations.

An inventory of present land use practices and recommended future use and development for each habitat type will be included in the plan. Existing facilities will be identified along with recommendations as to their future use or disposal. GIS generated aerial photographs, maps and soils data will be incorporated into management planning when available and feasible.

V. LAND MANAGEMENT RESPONSIBILITIES

The MOU identifies the Department as the lead management agency for WPAs in Iowa. As such, the Department provides major financial support for WPA management. The cooperative nature of this partnership affords flexibility in our shared responsibilities to ensure that critical elements are accomplished in a timely manner. Work will be accomplished in accordance with the approved CCP and applicable step down plans (e.g. HMP, Visitor Services Plan, Hunt Plan). The Iowa WMD CCP and step down plans are hereby made a part of the Procedural Agreement and will be used in the management of Iowa's WPAs. Responsibilities for specific elements are described as follows:

A. Administration

1. Service will make annual federal payments to the counties according to P.L. 95-469, Refuge Revenue Sharing Act as amended in 1978.

2. Service will issue Special Use Permits and receive monetary receipts.

3. Department will negotiate and administer Cooperative Farming Agreements following Department and Service land management policy and guidelines. One copy will be kept at the WMD office. The Service Project Leader will review the Cooperative Farming Agreements for consistency with the CCP at the beginning of each agreement period. Department shall not accrue income nor barter goods or services under these agreements. All cooperative farming activities will be consistent with 50 CFR 29.2 (Cooperative land management). Department will have signature authority for FSA and NRCS documents pertaining to Cooperative Farming Agreements.

4. Service and Department will conduct compliance checks for all Special Use Permits and Cooperative Farming Agreements.

5. Service will process all applications for rights-of-way.

6. Service will conduct real property inventory.

7. Service and Department will provide administrative services associated with construction contracts.

8. Department will erect, maintain, and/or remove fences.

9. Service will provide all Service boundary, recognition, and regulatory signs and posts. Department will provide special use, boundary, public hunting, and recognition signs as appropriate and as outlined in the CCP or Visitor Services Plan.

10. Department will install and maintain signs on WPAs.

11. Service and Department will evaluate all WPAs at least once a year for wildlife and habitat resource values.

12. Service will maintain a closed case file of all fee and easement purchases. The original closed case file will be available in the Division of Realty, Bloomington, Minnesota.

B. Building Sites and Other Improvements

1. Service will inventory, administer sales, and bury and/or remove debris, junk, and unsold buildings and structures. Department will assist when appropriate.

2. Service and/or Department will fill and/or cap wells, septic systems, and deep holes.

3. Service and/or Department will level and seed disturbed areas to suitable wildlife cover.

C. Cultural Resources

1. Department will provide the Service Project Leader with a Cultural Resource Clearance form, aerial photograph, and any consultant's findings regarding cultural resources. The Service Project Leader will notify the Regional Historic Preservation Officer who will evaluate all projects and consult with the State Historic Preservation Officer, Indian tribes, and other parties as applicable. The Service will pay for archeological investigations and studies. The Service Project Leader will provide the Department with results and will approve project implementation.

D. Wetland Development, Enhancement, and Restoration

Service and Department will design and construct water control facilities, plug existing ditches, and break or outlet tile lines. The Service will maintain these facilities. Department can provide labor, equipment and technical support.

E. Upland Habitat Management

1. Service and Department will manage existing cover and establish and manage permanent and rotational nesting cover for migratory waterfowl and grassland birds in accordance to objectives outlined in the CCP and HMP.

2. Crop production as a method for the conversion of uplands to waterfowl nesting cover is an acceptable practice.

3. Permanent food plots are permitted at levels identified in the WMD CCP, WMD HMP, and WPA unit plans.

4. Department will control noxious weeds as necessary adhering to Pesticide Use Proposals and reporting use to the Service Project Leader as requested.

F. Law Enforcement

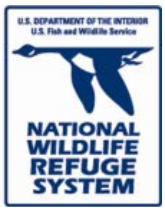
1. Department will assume primary responsibility to enforce regulations on WPAs necessary to protect the resource. Department will submit an annual WMD report summarizing law enforcement incidents and citations (by category) to Service.

2. Service will enforce regulations and prosecute violations in federal court. Service will conduct annual reconnaissance to detect violations on Service easements.

3. Service and Department will inspect WPAs annually for land-use violations.

G. Public Use

1. WPAs will be open for hunting, fishing, and trapping in accordance with existing federal regulations. Other wildlife-dependent uses (wildlife observation, wildlife photography, environmental education, and interpretation) are allowed as stated in the WMD CCP. The public will be notified of allowed uses through signage, leaflets or other means. The use of any vehicle is prohibited except for persons with disabilities holding a special Department permit. Other uses may be permitted following the approval of a Service compatibility determination. In special cases, WPAs, or portions thereof, may be closed to all uses for resource protection or for reasons of human health and safety. Such closures must be approved by the Service's Regional Office. Refer to Title 50, Code of Federal Regulations for complete regulations governing the use of WPAs.



Iowa Wetland Management District
1710 360th Street
Titonka, Iowa 50480
(515) 928-2523
http://www. fws.gov/refuge/iowa_wmd

U.S. Fish and Wildlife Service
http://www.fws.gov

Region 3, U.S. Fish and Wildlife Service
http://www.fws.gov/midwest