1 Purpose and Need

Tim Bowman/USFWS

Nesting Canada goose.

This document presents the final comprehensive conservation plan (CCP) for Arrowwood National Wildlife Refuge (NWR) in North Dakota (see vicinity map , figure 1).

NOTE: The Arrowwood National Wildlife Refuge Complex includes Arrowwood NWR, Arrowwood Wetland Management District (WMD), Chase Lake WMD, and Valley City WMD. This CCP does not address management of areas other than Arrowwood NWR. One or more CCPs will be developed to guide management of the districts and their inclusive waterfowl production areas and refuges.

This chapter provides agency guidance, an overview of the refuge, and the purpose and need for the plan.

1.1 Agency Guidance

This section describes agency guidance—laws and policies—that affects national wildlife refuges. This includes guidance that requires and directs development of a CCP for a national wildlife refuge.

The Service is the principal agency responsible for conservation of the United States' fish, wildlife, and plant resources. The Service shares this responsibility with other federal agencies and state and tribal governments.

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

The Service manages a diverse network of more than 540 national wildlife refuges within the Refuge System, which encompasses 95 million acres of lands and waters. Arrowwood NWR is one of 60 national wildlife refuges in North Dakota and was the 70th national wildlife refuge established.

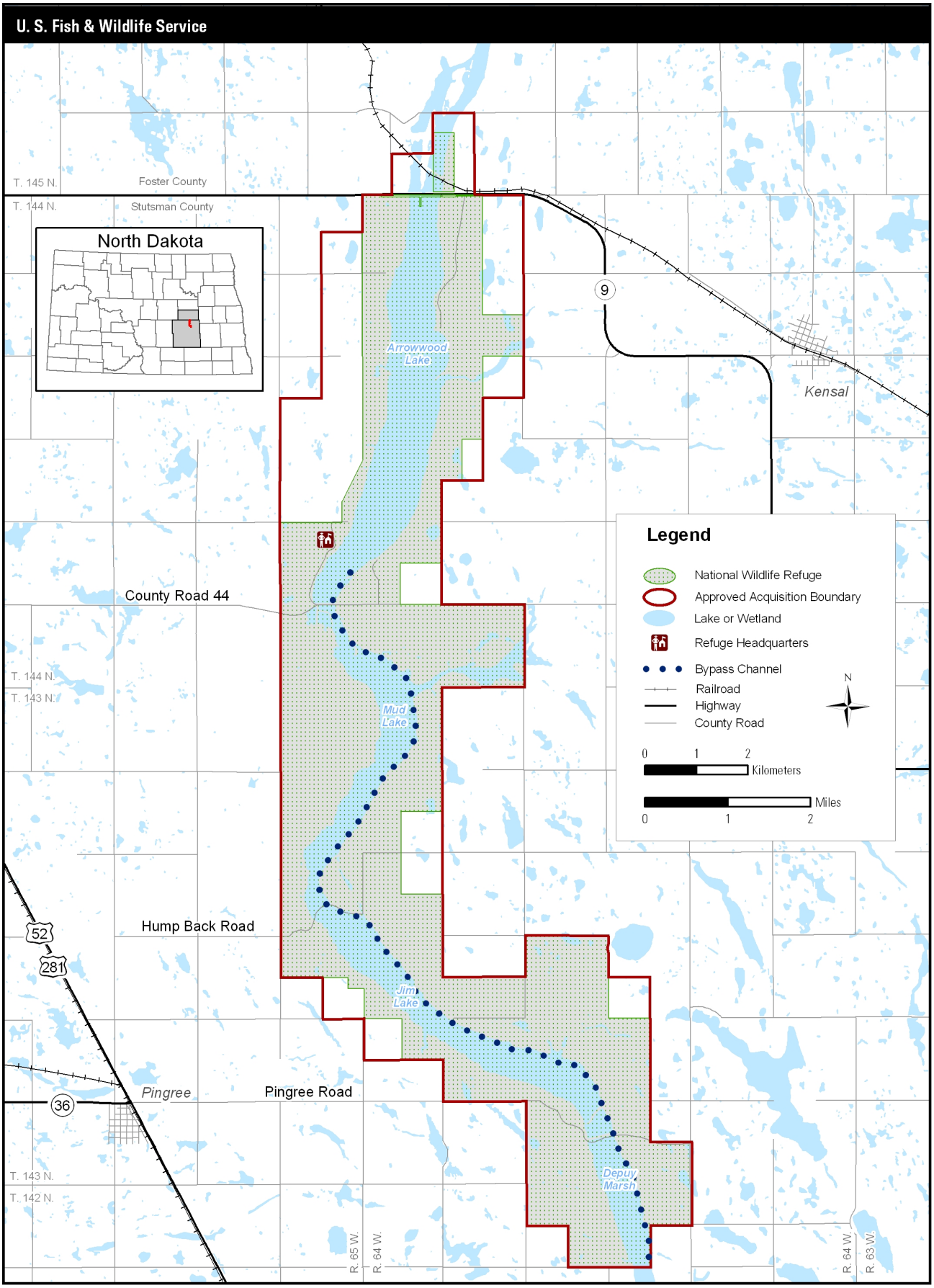

Figure 1. Vicinity map for Arrowwood NWR, North Dakota.

The mission of the National Wildlife Refuge System is to administer a 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.

Laws

Operation and management of national wildlife refuges are influenced by a wide array of laws, treaties, and executive orders (appendix A). The primary guidance comes from these laws:

- National Wildlife Refuge System Administration Act of 1966, as amended (Administration Act)
- National Wildlife Refuge System Improvement Act of 1997 (Improvement Act)

Policies

All national wildlife refuges are established with the following goals ("The Fish and Wildlife Service Manual," 601 FW 1, 1.8):

- 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, photography, environmental education, and interpretation).
- Foster understanding and instill appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.

These goals help step down the Refuge System mission and the principles of the 1997 amendments to the Administration Act. These goals articulate the foundation for stewardship of the Refuge System and define the unique niche it occupies among various federal land systems.

There are four guiding principles for management and general public use of the Refuge System established by Executive Order 12996 (appendix A):

Public Use—The Refuge System provides important opportunities for compatible wildlife-dependent recreational uses involving hunting, fishing, wildlife observation, photography, interpretation, and environmental education.

Habitat—Fish and wildlife will not prosper without high-quality habitat and, without fish and wildlife, traditional uses of refuges cannot be sustained. The Refuge System will continue to conserve and enhance the quality and diversity of fish and wildlife habitat within refuges.

Partnerships—America's sportsmen and women were the first partners who insisted on protecting valuable wildlife habitat within wildlife refuges. Conservation partnerships with other federal agencies, state agencies, tribes, organizations, industry, and the general public can make significant contributions to the growth and management of the Refuge System.

Public Involvement—The public should be given a full and open opportunity to participate in decisions regarding acquisition and management of our national wildlife refuges.

To maintain the health of individual refuges and the Refuge System as a whole, managers must anticipate future conditions—to avoid adverse effects and take positive actions to conserve and protect refuge resources. Effective management also depends on knowledge of larger systems and resource relationships.

- The Service adopted an ecosystem approach to conservation to enable it to fulfill its federal trust resource responsibility with greater efficiency and effectiveness. Through this holistic approach to resource conservation, the Service can accomplish its mission.
- An ecosystem approach to fish and wildlife conservation means protecting or restoring functions, structure, and species composition of an ecosystem, while providing for its sustainable socioeconomic use. Key to carrying out this approach is recognizing that partnerships are an essential part of a diverse management to accomplish ecosystem health.
- The Service has adopted watersheds as the basic building blocks for ecosystem conservation. Arrowwood NWR is located in the "main stem Missouri River ecosystem" (MMRE), which includes North Dakota, South Dakota, and northeastern Montana (figure 2). Ecosystem planning for the MMRE sets forth visions and

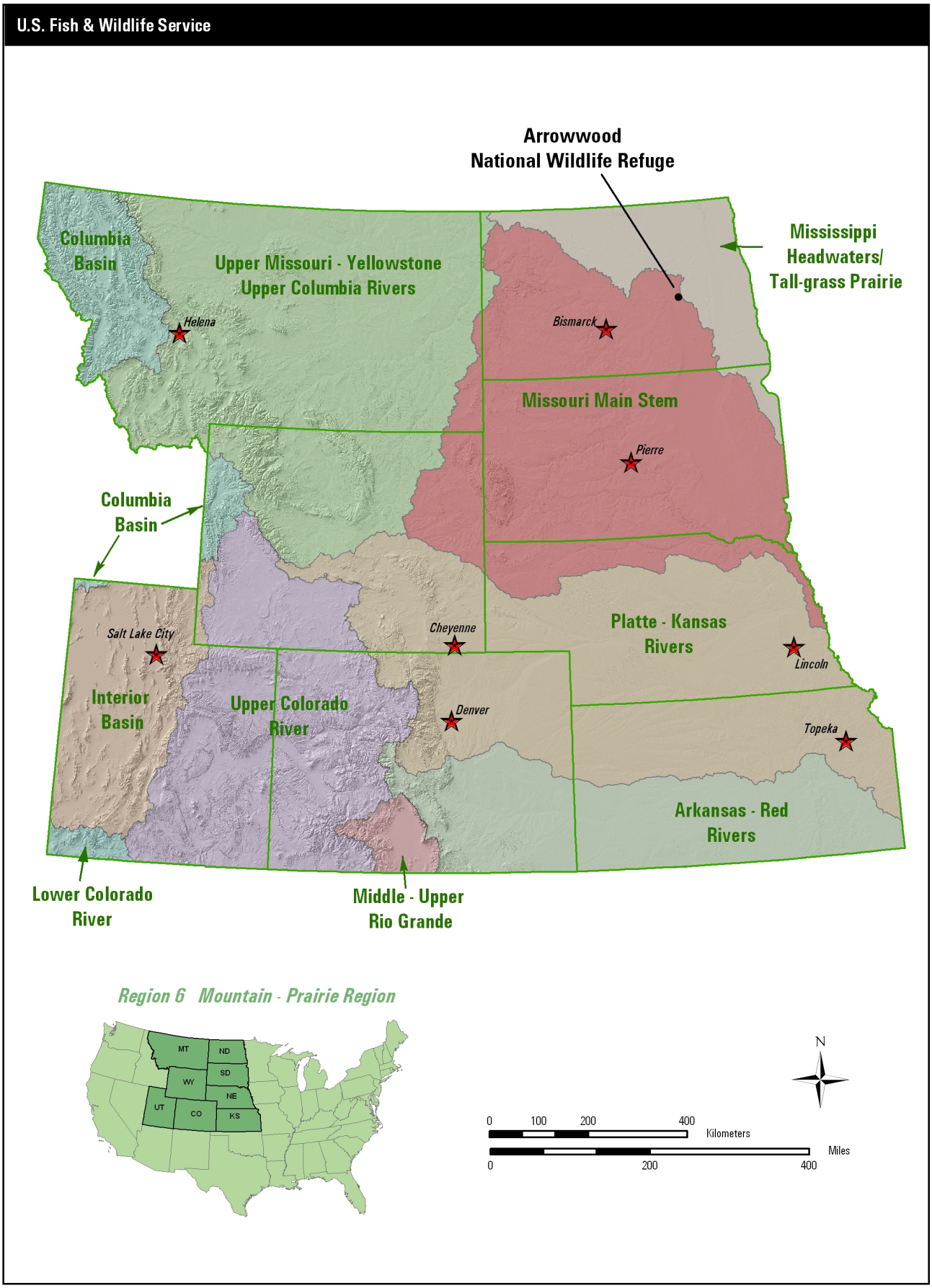

Figure 2. Main stem Missouri River ecosystem.

goals for prairie, wetland, and rivers to conserve fish and wildlife by protecting and restoring the natural ecosystem (appendix B). The habitat and wildlife goals and objectives for Arrowwood NWR contribute to the mission of the MMRE.

It is the policy of the federal government—in cooperation with other nations and in partnership with states, local governments, Indian tribes, and private organizations and individuals—to administer federally owned, administered, or controlled prehistoric and historic resources in a spirit of stewardship for the benefit of present and future generations.

Guidance for Planning

The Administration Act, as amended by the Improvement Act (1997), requires that CCPs be in place for all national wildlife refuges within 15 years (2012).

A CCP does the following:

- ensures that the purpose of the refuge and mission of the National Wildlife Refuge System (Refuge System) are being fulfilled
- ensures that national policy direction is incorporated into refuge management
- ensures that opportunities are available for interested parties to participate in the development of management direction
- provides a systematic process for making and documenting refuge decisions
- establishes broad strategies for refuge programs and activities
- provides a basis for evaluating accomplishments

The Improvement Act calls for making opportunities for wildlife-dependent recreation, as long as they are compatibly managed with other purposes and do not conflict with other use. Service policy allows recreational uses that are determined compatible. A compatible use is "a proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge, that based on sound professional judgment, would not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose(s) of the national wildlife refuge" (50 Code of Federal Regulations [CFR] 25.12).

A compatible use generally does one or more of the following:

- contributes to the Refuge System mission, the refuge's major purposes, or refuge goals or objectives
- is a public priority use (fishing, hunting, wildlife observation, photography, interpretation, or environmental education)
- supports the safe and effective conduct of a priority public use

1.2 Refuge Overview

This overview presents descriptions of the establishment of the refuge, the history of the refuge area, and the Garrison Diversion Unit project.

Refuge Establishment

Management is dictated, in large part, by legislation that created the refuge and defines the purposes for which the refuge was established.

Five authorities exist for the acquisition and establishment of Arrowwood National Wildlife Refuge:

- Executive Order 7168—"as a refuge and breeding ground for migratory birds and other wild life."
- Migratory Bird Conservation Act—"for use as an inviolate sanctuary, or for any other management purpose, for migratory birds."
- The Fish and Wildlife Act—"for the development, advancement, management, conservation, and protection of fish and wildlife resources."
- National Wildlife Refuge System Administration Act—"conservation, management, and … restoration of the fish, wildlife, and plant resources and their habitats … for the benefit of present and future generations of Americans."
- The Refuge Recreation Act—"for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species."

On September 4, 1935, President Franklin D. Roosevelt signed Executive Order 7168, establishing Arrow-wood Migratory Waterfowl Refuge. The order stated, "To effectuate the purposes of the Migratory Bird Conservation Act, it is ordered that the following described lands ... are hereby, reserved and set apart ... as a refuge and breeding ground for migratory birds and other wildlife." In a news release dated October 30, 1935 and titled "Two More 'Safety Islands' for Ducks in North Dakota," the Department of Agriculture stated, "Arrow-wood still offers annual nesting and resting attractions to large concentrations of ducks, largely canvasbacks, redheads, mallards and pintails. Canada geese, swans and white pelicans also inhabit the area ... Water ... caught (impounded) and held would be seasonably distributed to create favorable conditions for aquatic-plant production and the growth of nesting cover ... In addition to creating an ideal nesting condition for waterfowl, this development would also provide for control of flood waters of the James River."

History

The refuge and surrounding area were not settled until the late 1870s. Prior to that time, it was an important location along the Fort Totten Trail, a freight trail from Jamestown to Fort Totten, located near Devils Lake. Several watering stops were located along the valley and fuel wood was obtained from numerous wooded ravines.

The first Europeans to establish residence were ranchers. However, following the turn of the century, homesteaders flocked into the area and the native prairie was put to the plow. The irregular terrain prevented some of what is now refuge land from being broken; the more level portions were in crop production prior to establishment. Most of the former cropland was heavily infested with smooth brome by the time of establishment and the first refuge manager immediately "retired" many of these fields. Although a few of these areas were seeded to introduced grasses, most of them were allowed to revert or "go back" by natural succession.

During the drought years of the thirties, extensive croplands lay idle and reverted slowly from annual weeds, forbs, and sweetclover to perennial grasses. Since the grasslands were extensively overgrazed prior to establishment of the refuge, very limited grazing of native grasslands was allowed until the early forties. At that time, it was deemed that the grasslands had recovered from the previous years of misuse. Demands for grazing land increased following World War II, and many new grazing units were set up to satisfy local needs. The stocking rates and season lengths later proved to be excessive and refuge grasslands continued to deteriorate in species composition and value for wildlife.

Soon after the refuge was established, CCC and Works Progress Administration (WPA) camps were set up on the southeast side of Arrowwood Lake. The United States was just coming out of the 1930s Dust Bowl period. Arrowwood NWR was created in response to the drought, low waterfowl numbers, and an economic downturn. The CCC immediately set out to develop the refuge for water management and to benefit people. The CCC and WPA employed many local men and lasted until 1942.

Efforts of the first refuge managers led to enhancement of the three natural water areas and creation of a fourth. Two of these (Arrowwood and Jim lakes) were relatively deep, while the other two (Mud Lake and Depuy Marsh) were shallow marshes. The initial CCC development work took place during a drought, leading to the assumption that too much water would not be a problem. Consequently, refuge impoundments were designed to store water rather than facilitate drawdowns and dewatering to manage pools. While valid during the drought, this operation was later discovered to be impractical for obtaining maximum waterfowl use; higher water levels were not conducive to production of vegetation preferred by waterfowl.

USFWS

Jim Lake.

Prior to 1945, haying activity at the refuge was limited. However, as beef prices increased and more private lands were put into crop production, the demand for hay increased and extensive acreages of refuge grasslands were cut for hay. In addition, Kentucky bluegrass seed was harvested for 10 years (1947–1957). This practice was very detrimental to nesting waterfowl since it was conducted during peak nesting season.

Management at the refuge went from more than 11,700 upland acres idle in 1935 to only about 1,000 acres by 1953. The adverse effect on wildlife production was noted and management changes were made, as follows:

- bluegrass stripping was eliminated
- hayed acres were decreased by half in 1958 and virtually eliminated by 1960
- cropped acres peaked in 1957, but were reduced by 75% soon after
- grazed acres increased and peaked at more than 9,000 acres in 1963

Garrison Diversion Unit

In 1944, Congress passed the Flood Control Act, which was later renamed the Pick-Sloan Missouri Basin Program. This act authorized construction of a series of dams, power plants, irrigation projects, municipal water systems, and other water control features to manage the Missouri River for flood control, navigation, and power. The Garrison Diversion Unit was developed as part of this massive public works project. An early feature of the project was the Jamestown Dam, which was completed in 1954 for flood control. The Jamestown Reservoir filled for the first time in 1965; since then, backwater effects have resulted in higher water levels at Arrowwood NWR. In 1972, the summer operating

level of the reservoir was raised by 3 feet to accommodate recreation and allow for the release of flushing flows through the city of Jamestown to prevent stagnation. The increase in the reservoir operating level eliminated water management options at the refuge in most years.

The James River has been called the flattest river of its length in North America. The river drops less than 0.5 foot per mile in the reach through and below the refuge. The low slope, coupled with water control structures initially designed to hold water, made elevation manipulations difficult at best. Operations of the Jamestown Reservoir further hampered refuge management.

The Garrison Diversion Unit Reformulation Act of 1986 requires mitigations for impacts to refuge operations caused by features of the Garrison Diversion Unit project. An interagency team assessed various measures to improve water management capabilities at the refuge during normal water years. An environmental impact statement (EIS), initiated in 1994 and signed in 1997, analyzed the need to provide the Arrowwood NWR with water management capability to mitigate for high water levels imposed by the Jamestown Reservoir. The EIS presents an incremental series of actions that can provide various levels of water management capability. The preferred alternative selected was the "Mud and Jim Lakes Bypass–Lower Joint Use Pool Alternative." This alternative consists of downstream channel improvements, improved water control structures, fish barriers, a 2.5-mile channel around Jim Lake, a 7-mile channel around Mud Lake, a dike and water control structure at Stony Brook, and subimpoundments within Mud and Jim lakes. The alternative also calls for the reduction of the Jamestown Reservoir "Joint Use Pool" elevation by 1.8 feet. Once the mitigation project is completed, the features are expected to mitigate for past, current, and future impacts of the operations of the Jamestown Reservoir. The series of channels, capable of passing flood waters in 7 of 10 years, will also allow managers to perform water level manipulations on all pools independently of the other pools, both upstream and downstream.

1.3 Purpose of and Need for the Plan

The Improvement Act directs the Service to manage national wildlife refuges in accordance with approved CCPs. These plans must include public involvement in their development. A CCP needs to set goals and objectives that meet the establishment purposes for the refuge, as well as contribute to the mission of the Refuge System. Wildlife has first priority in the management of national wildlife refuges.

The purpose of developing the CCP is to provide the refuge manager with a 15-year management plan for the conservation of fish, wildlife, and plant resources and their related habitats, while providing opportunities for compatible wildlife-dependent recreational uses.

The CCP, when fully implemented, should do the following:

- achieve the refuge purposes
- help fulfill the Refuge System mission
- maintain and, where appropriate, restore the ecological integrity of each refuge and the refuge System
- help achieve the goals of the National Wilderness Preservation System
- meet other mandates

Vision Statement

As part of the planning process (see chapter 2), the refuge staff and planning team developed the following vision statement for Arrowwood NWR.

Provide quality habitat for threatened and endangered species, waterfowl, other migratory birds, and other wildlife in the Prairie Pothole Region of North Dakota. The refuge will provide an environment where a diversity of riparian, native prairie, grassland, and wetland habitats and their associated wildlife can be observed and explored. People will be able to learn about and appreciate the natural environment of the refuge and enjoy opportunities for wildlife-dependent recreation.

Goals

A goal is a descriptive, broad statement of desired future conditions that conveys a purpose, but does not define measurable units. Goals will direct work at carrying out the refuge's mandates and achieving the purposes. Each management alternative is designed to meet all the goals for the refuge.

These goals are derived from the purposes and vision statement for the refuge to reflect the refuge's contribution to the Refuge System. The goals reflect the core mission of the Service to protect fish, wildlife, and plant resources while providing opportunities for the public to appreciate and enjoy the natural environment of the region.

Upland Goal

Provide a diversity of grassland types that emulate the range of natural variation characteristic of the Prairie Pothole Region to benefit trust resources including waterfowl, grassland birds, and songbirds.

Wetland Goal

Provide a diversity of wetland types that emulate the range of natural variation characteristic of the Prairie Pothole Region to benefit threatened and endangered species, waterfowl, shorebirds, wading birds, and other wetland birds.

Visitor Services Goal

Visitors of all abilities will enjoy a refuge visit and increase their knowledge and appreciation of the prairie ecosystem and the refuge's history by participating in compatible wildlife-dependent recreation.