Glossary

ac—Acre.

accessible—Pertaining to physical access to areas and activities for people of different abilities, especially those with physical impairments.

A.D.—Anno Domini, "in the year of the Lord."

adaptive resource management—The rigorous application of management, research, and monitoring to gain information and experience necessary to assess and modify management activities. It is a process that uses feedback from research, monitoring, and evaluation of management actions to support or modify objectives and strategies at all planning levels. It is also a process in which the Service carries out policy decisions within a framework of scientifically driven experiments to test predictions and assumptions inherent in management plans. Analysis of results helps managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.

alternative—Reasonable way to solve an identified problem or satisfy the stated need (40 CFR 1500.2); one of several different means of accomplishing refuge and district purposes and goals and contributing to the Refuge System mission ("Draft Fish and Wildlife Service Manual" 602 FW 1.5).

amphibian—Class of cold-blooded vertebrates that includes frogs, toads, and salamanders.

annual—Plant that flowers and dies within 1 year of germination.

BAER—Burned Area Emergency Response.

BAR—Burned Area Rehabilitation.

baseline—Set of critical observations, data, or information used for comparison or a control.

biological control—Organisms or viruses used to control invasive plants or other pests.

biological diversity, biodiversity—Variety of life and its processes including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur ("Fish and Wildlife Service Manual" 052 FW 1.12B). The National Wildlife Refuge System's focus is on indigenous species, biotic communities, and ecological processes.

biotic—Pertaining to life or living organisms; caused, produced by, or comprising living organisms.

breeding habitat—Environment used by migratory birds or other animals during the breeding season.

canopy—Layer of foliage, generally the uppermost layer, in a vegetative stand; midlevel or understory vegetation in multilayered stands. Canopy closure (also canopy cover) is an estimate of the amount of overhead vegetative cover.

CCP—See comprehensive conservation plan.

CFR—See Code of Federal Regulations.

cfs—Cubic feet per second.

cm—Centimeter.

CO_2—Carbon dioxide.

Code of Federal Regulations (CFR)—Codification of the general and permanent rules published in the Federal Register by the Executive departments and agencies of the Federal Government. Each volume of the CFR is updated once each calendar year.

Compact—Montana House Bill Number 717–Bill to Ratify Water Rights Compact.

Compact Commission—Montana Reserved Water Rights Compact Commission.

compatibility determination—See compatible use.

compatible use—Wildlife-dependent recreational use or any other use of a refuge or district that, in the sound professional judgment of the Director of the U.S. Fish and Wildlife Service, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge or district ("Draft Fish and Wildlife Service Manual" 603 FW 3.6). A compatibility determination supports the selection of compatible uses and identified stipulations or limits necessary to ensure compatibility.

comprehensive conservation plan (CCP)—Document that describes the desired future conditions of the refuge or district and provides long-range guidance and management direction for the refuge manager to accomplish the purposes of the refuge or district, contribute to the mission of the Refuge System, and meet other relevant mandates ("Draft Fish and Wildlife Service Manual" 602 FW 1.5).

concern—See issue.

cool-season grass—Grass that begins growth earlier in the season and often becomes dormant in summer; grasses that germinate at lower tem-

peratures. Examples of cool-season grasses in the refuge complex are western wheatgrass, needle and thread, and green needlegrass.

conservation—Management of natural resources to prevent loss or waste; actions may include preservation, restoration, and enhancement.

conservation easement—Perpetual agreement entered into by a landowner and the Service by which a landowner gives up or sells one or more of the rights on their property for conservation purposes, with terms set by the Service. In return for a single lump-sum payment, the landowner agrees not to drain, burn, level, or fill habitats covered by the easement. Conservation easements generally prohibit the cultivation of grassland and wetland habitats while still permitting the landowner traditional grazing uses. A single-habitat conservation easement is often referred to as either a wetland easement or a grassland easement.

coordination area—Wildlife management area made available to a State by a "cooperative agreement between the United States Fish and Wildlife Service and the State fish and game agency pursuant to section 4 of the Fish and Wildlife Coordination Act (16 U.S.C. 664); or (B) by long-term leases or agreements pursuant to the Bankhead–Jones Farm Tenant Act (50 Stat. 525; 7 U.S.C. 1010 et seq.)." States manage coordination areas, but they are part of the Refuge System. CCPs are not required for coordination areas.

cover, cover type, canopy cover—Present vegetation of an area; also see canopy.

cultural resources—Remains of sites, structures, or objects used by people in the past.

dense nesting cover (DNC)—Composition of grasses and forbs that allows for a dense stand of vegetation that protects nesting birds from the view of predators, usually consisting of one to two species of wheatgrass, alfalfa, and sweetclover.

DEQ—Montana Department of Environmental Quality.

district—See wetland management district

district purpose—See purpose of the refuge.

disturbance—Significant alteration of habitat structure or composition from natural causes such as wildfire or human-caused activities and development such as timber harvest and road building.

DNC—See dense nesting cover.

DNRC—Montana Department of Natural Resources and Conservation.

drawdown—Manipulating the water level in an impoundment to allow for the natural drying-out cycle of a wetland.

duck, dabbling—Duck that mainly feeds on vegetable matter by upending on the water surface or by grazing and only rarely dives.

duck, diving—Duck that mainly feeds by diving through the water.

EA—See environmental assessment.

easement, flowage—Easement signed by the landowner granting the Service the right to maintain and operate an artificial lake or raise the water of a natural lake or stream—by means of dams, dikes, fills, ditches, spillways, and other structures—for water conservation, drought relief, migratory birds, and other wildlife conservation purposes.

easement, refuge—Easement signed by the landowner granting the Service the right to control hunting and trapping, to maintain a wildlife conservation demonstration unit, and to maintain a closed refuge and reservation for migratory birds and other wildlife.

EC—Electrical conductivity.

ecosystem—Dynamic and interrelating complex of plant and animal communities and their associated nonliving environment; a biological community, together with its environment, functioning as a unit. For administrative purposes, the U.S. Fish and Wildlife Service has designated 53 ecosystems covering the United States and its possessions. These ecosystems generally correspond with watershed boundaries and their sizes and ecological complexity vary.

ecotype—Subspecies or race that is especially adapted to a particular set of environmental conditions.

emergent—Plant rooted in shallow water and having most of the vegetative growth above water such as cattail and hardstem bulrush.

endangered species, Federal—Plant or animal species listed under the Endangered Species Act of 1973, as amended, that is in danger of extinction throughout all or a significant portion of its range.

endangered species, State—Plant or animal species in danger of becoming extinct or extirpated in a particular State within the near future if factors contributing to its decline continue; species with a population at a critically low level or having habitat that has been degraded or depleted to a significant degree.

environmental assessment (EA)—Concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action and alternatives to such action and that provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).

EPA—U.S. Environmental Protection Agency.

evapoconcentration—Concentration of chemical constituents in a liquid due to evaporative processes.

extinction—Complete disappearance of a species from the earth; no longer existing.

extirpation—Extinction of a population; eradication of a species within a specified area.

°F—Temperature in degrees Fahrenheit.

fauna—Vertebrate and invertebrate animals in an area.

Federal trust resource—Resource managed by one entity for another who holds the ownership. The Service holds in trust many natural resources for the people of the United States of America as a result of Federal acts and treaties; examples are species listed under the Endangered Species Act, migratory birds protected by international treaties, and native plant or wildlife species found on a national wildlife refuge.

Federal trust species—Species where the Federal Government has primary jurisdiction including federally endangered or threatened species, migratory birds, anadromous fish, and certain marine mammals.

fee title—Acquisition of most or all of the rights to a tract of land.

Federal land—Public land owned by the Federal Government including lands such as national wildlife refuges, national forests, and national parks.

flora—Plant species in an area.

FmHA—Farmers Home Administration.

forb—Broad-leaved herbaceous plant; seed-producing annual, biennial, or perennial plant that does not develop persistent woody tissue but dies down at the end of the growing season.

fragmentation—Alteration of a large block of habitat that creates isolated patches of the original habitat interspersed with a variety of other habitat types; process of reducing the size and connectivity of habitat patches, making movement of individuals or genetic information between parcels difficult or impossible.

ft—Feet, length measure.

full-time equivalent—One or more job positions with tours of duty that, when combined, equate to one person employed for the standard Government work-year.

FWS—See U.S. Fish and Wildlife Service.

Geographic Information System (GIS)—Computer system capable of storing and manipulating spatial data; set of computer hardware and software for analyzing and displaying spatially referenced features (such as points, lines and polygons) with nongeographic attributes such as species and age.

GIS—See Geographic Information System.

GLO—General Land Office.

glyphosate—Glyphosate N–(phosphonomethyl) glycine; broad-spectrum systemic herbicide used to kill invasive plants, especially perennials. Glyphosate inhibits an enzyme involved in the synthesis of the amino acids tyrosine, tryptophan, and phenylalanine; absorbed through foliage and translocated to growing points, it is only effective on actively growing plants and is not effective as a pre-emergence herbicide.

goal—Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units ("Draft Fish and Wildlife Service Manual" 620 FW 1.5).

gpm—Gallons per minute, water flow.

grassland tract—Contiguous area of grassland that is unfragmented.

GPS—Global Positioning System.

GS—General schedule pay rate schedule for certain Federal positions.

habitat—Suite of existing environmental conditions required by an organism for survival and reproduction; place where an organism typically lives and grows.

habitat type, vegetation type, cover type—Land classification system based on the concept of distinct plant associations.

HAPET—Habitat Assessment and Population Evaluation Team.

hemimarsh—Emergent phase of a seasonal or semipermanent wetland where the ratio of open-water area to emergent vegetation cover is about 50:50 and vegetation and open-water areas are highly interspersed.

hydroperiod—Period of time during which soils, waterbodies, and sites are wet.

impoundment—Body of water created by collection and confinement within a series of levees or dikes, creating separate management units although not always independent of one another.

Improvement Act—National Wildlife Refuge System Improvement Act of 1997.

in—Inch.

indigenous—Originating or occurring naturally in a particular place.

integrated pest management—Methods of managing undesirable species such as invasive plants; education, prevention, physical or mechanical methods of control, biological control, responsible chemical use, and cultural methods.

"interseed"—Mechanical seeding of one or several plant species into existing stands of established vegetation.

introduced species—Species present in an area due to intentional or unintentional escape, release, dissemination, or placement into an ecosystem as a result of human activity.

invasive species—Species that is nonnative to the ecosystem under consideration and whose intro-

duction causes, or is likely to cause, economic or environmental harm or harm to human health.

inviolate sanctuary—Place of refuge or protection where animals and birds may not be hunted.

issue—Any unsettled matter that requires a management decision; for example, a 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 ("Draft Fish and Wildlife Service Manual" 602 FW 1.5).

issue remark—An industry term in the State of Montana denoting official documentation of a problem with a water rights claim, such as an incorrect identification of the place of water diversion or use, an incorrect priority date, or a claim in excess of the amount of water historically put to beneficial use.

lek—An elevated patch of grassland used by male grouse to display and challenge one another to attract females; the elevation not only provides a clear view to interested female grouse, but it also enables the males to spot predators at a distance.

management alternative—See alternative.

management plan—Plan that guides future land management practices on a tract of land.

MBOGC—Montana Board of Oil and Gas Conservation.

mg/L—Milligrams per liter; measure of weight per volume, in this case, salts in water.

migration—Regular extensive, seasonal movements of animals between their breeding regions and wintering regions; to pass periodically from one region or climate to another for feeding or breeding.

migratory bird—Bird species that follows a seasonal movement from its breeding grounds to its wintering grounds; includes waterfowl, shorebirds, raptors, and songbirds.

mission—Succinct statement of purpose or reason for being.

mitigation—Measure designed to counteract an environmental impact or to make an impact less severe.

mixed-grass prairie—Transition zone between tallgrass prairie and shortgrass prairie dominated by grasses of medium height that are about 2–4 feet tall; soils are not as rich as in the tallgrass prairie and moisture levels are less.

mmhos/cm—Millimhos per centimeter; measure of a solution's ability to conduct electricity, in this case, for salinity.

MOA—Memorandum of agreement.

monitoring—Collecting information to track changes of selected parameters over time.

MOU—Memorandum of understanding.

mS—MilliSiemens.

MSGWG—Montana Sage Grouse Working Group.

national wildlife refuge (NWR)—Designated area of land, water, or an interest in land or water within the National Wildlife Refuge System but does not include coordination areas; listing of all units of the Refuge System is in the current Annual Report of Lands Under Control of the U.S. Fish and Wildlife Service.

National Wildlife Refuge System (Refuge System)—Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife including species threatened with extinction; all lands, waters, and interests therein administered by the Secretary as wildlife refuges; areas for the protection and conservation of fish and wildlife that are threatened with extinction; wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas.

National Wildlife Refuge System Improvement Act of 1997 (Improvement Act)—Set administrative policy for all refuges and units in the National Wildlife Refuge System; defined a unifying mission for the Refuge System; established the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation, photography, environmental education, and interpretation); established a formal process for determining appropriateness and compatibility; established the responsibilities of the Secretary of the Interior for managing and protecting the Refuge System; required a comprehensive conservation plan for each unit by the year 2012; amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

native species—Species that, other than as a result of an introduction, historically occurred or currently occurs in a specific ecosystem.

neotropical migrant, migratory bird—Bird species that breeds north of the United States and Mexican border and winters primarily south of this border.

NEPA—National Environmental Policy Act.

nest success—Chance that a nest will hatch at least one egg.

nongovernmental organization—Group that is not comprised of Federal, State, tribal, county, city, town, local, or other governmental entities.

North American Waterfowl Management Plan—Recognized that the recovery and perpetuation of waterfowl populations depends on restoring wetlands and associated ecosystems throughout the United States and Canada; established cooperative international efforts and joint ventures comprised of individuals, corporations, conserva-

tion organizations, and local, State, Provincial, and Federal agencies drawn together by common conservation objectives.

noxious weed—Plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, natural resources of the United States, public health, or the environment.

NRCS—Natural Resources Conservation Service.

NWR—See national wildlife refuge.

objective—Concise target statement of what will be achieved, how much will be achieved, when and where it will be achieved, and who is responsible for the work; derived from goals and provides the basis for determining management strategies; should be attainable, time-specific, and stated quantitatively to the extent possible (if cannot be stated quantitatively, may be stated qualitatively) ("Draft Fish and Wildlife Service Manual" 602 FW 1.5).

palustrine—Relating to a system of inland, nontidal wetlands characterized by the presence of trees, shrubs, and emergent vegetation (vegetation that is rooted below water but grows above the surface); palustrine wetlands range from permanently saturated or flooded land to land that is wet only seasonally.

Partners in Flight program—Western Hemisphere program designed to conserve neotropical migratory birds and officially endorsed by numerous Federal and State agencies and nongovernmental organizations; also known as the Neotropical Migratory Bird Conservation Program.

partnership—Contract or agreement entered into by two or more individuals, groups of individuals, organizations, or agencies in which each agrees to furnish a part of the capital or some in-kind service such as labor for a mutually beneficial enterprise.

patch—Area distinct from that around it; distinguished from its surroundings by environmental conditions.

perennial—Lasting or active through the year or through many years; waterbody that retains water year-round; plant species that has a lifespan of more than 2 years.

planning team—Group of individuals that prepares the comprehensive conservation plan; interdisciplinary in membership and function; generally consists of a team leader, refuge manager, biologist, staff specialists or other representatives of Service programs, ecosystems or regional offices, and State or tribal partners' wildlife agencies as appropriate.

planning team leader—Professional planner or natural resource specialist knowledgeable of the requirements of National Environmental Policy Act and who has planning experience; manages the refuge planning process and ensures compliance with applicable regulatory and policy requirements.

planning unit—National wildlife refuge or wetland management district, or an ecologically or administratively related refuge complex, or a distinct unit of a refuge; may include lands outside refuge or district boundaries.

plant community—Assemblage of plant species unique in its composition that occurs in particular locations under particular influences; reflection or integration of the environmental influences on the site such as soil, temperature, elevation, solar radiation, slope, aspect, and rainfall; denotes a general kind of climax plant community such as ponderosa pine or bunchgrass.

ppt—Parts per thousand.

preferred alternative—Alternative selected to becomes the final plan; it can be the proposed action, the no action alternative, another alternative, or a combination of actions and alternatives described in the draft CCP and environmental analysis document.

prescribed fire—Skillful application of fire to natural fuels under specified conditions such as weather, fuel moisture, and soil moisture that allows confinement of the fire to a predetermined area and produces the intensity of heat and rate of spread to accomplish planned benefits to one or more objectives of habitat management, wildlife management, or hazard reduction.

pristine—Typical of original conditions.

private land—Land owned by a private individual, a group of individuals, or a nongovernmental organization.

private landowner—Individual, group of individuals, or nongovernmental organization that owns land.

private organization—Nongovernmental organization.

priority public use—One of six uses authorized by the National Wildlife Refuge System Improvement Act of 1997 to have priority if found to be compatible with a refuge or district's purposes; hunting, fishing, wildlife observation, photography, environmental education, and interpretation; also see wildlife-dependent recreational use.

proposed action—Alternative proposed to best achieve the purpose, vision, and goals of a refuge or district (contributes to the Refuge System mission, addresses the significant issues, and is consistent with principles of sound fish and wildlife management).

public—Individuals, organizations, and groups; officials of Federal, State, and local government agencies; Indian tribes; and foreign nations (may include anyone outside the core planning team); anyone who may or may not have indicated an interest in Service issues and those who do or do not realize that Service decisions may affect them.

public domain, reserved from—See reserved from public domain.

public involvement—Process that offers affected and interested individuals and organizations an opportunity to become informed about and to express their opinions on Service actions and policies; in the process, these views are studied thoroughly and thoughtful consideration is given to public views when shaping decisions for refuge and district management.

purpose of the refuge, district—Reason for establishment and management of a national wildlife refuge or wetland management district that is specified in or derived from the law, proclamation, Executive order, agreement, public land order, donation document, or administrative memorandum establishing authorization or expansion of a refuge, refuge unit, refuge subunit, or district ("Draft Fish and Wildlife Service Manual" 602 FW 1.5).

raptor—Carnivorous bird such as a hawk, falcon, or vulture that feeds wholly or chiefly on meat taken by hunting or on carrion (dead carcasses).

Reclamation—Bureau of Reclamation.

refuge—See national wildlife refuge.

Refuge Operations Needs System—National database that contains the unfunded operational needs of each refuge and district; projects included are those required to implement approved plans and meet goals, objectives, and legal mandates.

refuge purpose—See purpose of the refuge.

Refuge System—See National Wildlife Refuge System.

refuge use—Activity on a refuge, except administrative or law enforcement activity, carried out by or under the direction of an authorized Service employee.

reserved from public domain—Public land placed into permanent reserved status, such as a national wildlife refuge, that is not held in private ownership.

resident species—Species inhabiting a given locality throughout the year; nonmigratory species.

rest—Free from biological, mechanical, or chemical manipulation in reference to Service lands.

restoration—Management emphasis designed to move ecosystems to desired conditions and processes such as healthy upland habitats and aquatic systems.

riparian area, habitat, corridor—Area that transitions from a terrestrial to aquatic ecosystem including streams, lakes, wet areas, and adjacent plant communities and their associated soils that have free water at or near the surface; land and its vegetation immediately adjoining and directly influenced by a stream.

RLGIS—Refuge Lands Geographic Information System.

"round-outs"—Odd shapes and holes of non-Federal land within the boundary of Refuge System units that are straightened, or made whole, by the purchase of land tracts.

runoff—Water from rain, melted snow, or agricultural or landscape irrigation that flows over the land surface into a waterbody.

scoping—Process of obtaining information from the public for input into the planning process.

sediment—Material deposited by water, wind, and glaciers.

senior water rights—Rights to water that were legally filed earlier than junior (more recent) water rights, having precedence.

Service—See U.S. Fish and Wildlife Service.

Service Asset Maintenance Management System—National database that contains the unfunded maintenance needs of each refuge and district; projects include those required to maintain existing equipment and buildings and to correct safety deficiencies for the implementation of approved plans and to meet goals, objectives, and legal mandates.

shelterbelt—Single to multiple rows of trees and shrubs planted around cropland or buildings to block or slow down the wind.

shorebird—Suborder of birds (Charadrii) such as a plover or snipe that frequents the seashore or mudflat areas.

spatial—Relating to, occupying, or having the character of space.

special use permit—Special authorization from the refuge manager for any service, facility, privilege, or product of the soil provided at the Service's expense and not usually available to the general public through authorizations in Title 50 CFR or other public regulations ("Refuge Manual" 5 RM 17.6).

species of concern—Species, while not falling under the definition of special status species, that is of management interest by virtue of being Federal trust species such as migratory birds, important game species, or significant keystone species; species that has a documented or apparent population decline, a small or restricted population, or dependence on restricted or vulnerable habitats.

stand—Homogenous area of vegetation with more or less uniform soils, landform, and vegetation.

stepdown management plan—Specific plan that provides the details necessary to carry out management strategies identified in the comprehensive conservation plan ("Draft Fish and Wildlife Service Manual" 602 FW 1.5).

strategy—Specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives ("Draft Fish and Wildlife Service Manual" 602 FW 1.5).

submergent—Vascular or nonvascular plant adapted to grow in water, either rooted or nonrooted, that lies entirely beneath the water surface except for flowering parts in some species.

TDS—Total dissolved solids (salts).

threatened species, Federal—Species listed under the Endangered Species Act of 1973, as amended, that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

threatened species, State—Species likely to become endangered in a particular State within the near future if factors contributing to population decline or habitat degradation or loss continue.

trust resource—See Federal trust resource.

trust species—See Federal trust species.

µmhos/cm—Micromhos per centimeter; measure of a solution's ability to conduct electricity, in this case, for salinity.

µmhos/cm—Micromhos per centimeter; measure of a solution's ability to conduct electricity, in this case, for salinity.

ungulate—Hoofed mammal.

U.S.—United States.

µS/cm—MicroSiemens per centimeter; measure of a solution's ability to conduct electricity, in this case, for salinity.

U.S.C.—United States Code.

USDA—United States Department of Agriculture.

U.S. Fish and Wildlife Service (Service, FWS)—Part of U.S. Department of the Interior; principal Federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service manages the National Wildlife Refuge System comprised of national wildlife refuges and waterfowl production areas. The Service operates national fish hatcheries and ecological service field stations, enforces Federal wildlife laws, manages migratory bird populations, restores national significant fisheries, conserves and restores wildlife habitat such as wetlands, administers the Endangered Species Act, oversees the Federal aid program that distributes millions of dollars in excise taxes on fishing and hunting equipment to State wildlife agencies, and helps foreign Governments with their conservation efforts.

USFWS—See U.S. Fish and Wildlife Service.

U.S. Geological Survey—Federal agency in the U.S. Department of the Interior whose mission is to provide reliable scientific information to describe and understand the earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

ungulate—Hoofed mammal.

vision statement—Concise statement of the desired future condition of a planning unit, based primarily on the Refuge System mission, specific refuge or district purposes, and other relevant mandates ("Draft Fish and Wildlife Service Manual" 602 FW 1.5).

wading birds—Birds having long legs that enable them to wade in shallow water such as egret, great blue heron, black-crowned night-heron, and bittern.

waterbird—Birds dependent on aquatic habitats to complete portions of their life cycles.

waterfowl—Category of birds that groups ducks, geese, and swans.

watershed—Geographic area within which water drains into a particular river, stream, or waterbody.

wetland—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.

wetland management district—Land that the Refuge System acquires with Federal Duck Stamp money for restoration and management, primarily as prairie wetland habitat critical to waterfowl and other wetland birds.

WG—Wage Grade schedule, pay rate schedule for certain Federal positions.

wildfire—Free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs on wildlands.

wildland fire—Wildfire or prescribed fire that occurs in undeveloped land.

wildlife-dependent recreational use—Use of a refuge or district involving hunting, fishing, wildlife observation, photography, environmental education, or interpretation; also see priority public use.

wildlife management—Practice of manipulating wildlife populations either directly through regulating the numbers, ages, and sex ratios harvested or indirectly by providing favorable habitat conditions and alleviating limiting factors.

woodland—Open stands of trees with crowns not usually touching, generally forming 25- to 60-percent cover.

WPA—Waterfowl production area.

Appendix A

Key Legislation and Policy

This appendix briefly describes the guidance for the National Wildlife Refuge System and other key legislation and policies that guide management of the Bowdoin National Wildlife Refuge Complex.

A.1 National Wildlife Refuge System

> *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.* (National Wildlife Refuge System Improvement Act of 1997)

Goals

- To fulfill our statutory duty to achieve refuge purpose(s) and further the Refuge System mission.
- Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.
- Perpetuate migratory bird, interjurisdictional fish, and marine mammal populations.
- Conserve a diversity of fish, wildlife, and plants.
- Conserve and restore, where appropriate, representative ecosystems of the United States including the ecological processes characteristic of those ecosystems.
- To foster understanding and instill appreciation of fish, wildlife, and plants and their conservation, by providing the public with safe, quality, and compatible wildlife-dependent public use. Such use includes hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

Guiding Principles

There are four guiding principles for management and general public use of the Refuge System established by Executive Order 12996 (1996):

- *Public Use*—The Refuge System provides important opportunities for compatible wildlife-dependent recreational activities involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation.
- *Habitat*—Fish and wildlife will not prosper without 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.

A.2 Legal and Policy Guidance

Management actions on national wildlife refuges and wetland management districts are circumscribed by many mandates including laws and Executive orders. Regulations that affect refuge and district management the most are listed below.

American Indian Religious Freedom Act (1978)—Directed agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

Americans with Disabilities Act (1992)—Prohibited discrimination in public accommodations and services.

Antiquities Act (1906)—Authorized the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Archaeological and Historic Preservation Act (1974)—Directed the preservation of historic and archaeological data in Federal construction projects.

Archaeological Resources Protection Act (1979), as amended—Protected materials of archaeological interest from unauthorized removal or destruction, and requires Federal managers to develop plans and schedules to locate archaeological resources.

Architectural Barriers Act (1968)—Required federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

Clean Water Act (1977)—Required consultation with the U.S. Army Corps of Engineers (404 permits) for major wetland modifications.

Dingell–Johnson Act (1950)—Authorized the Secretary of the Interior to provide financial assistance for State fish restoration and management plans and projects. Financed by excise taxes paid by manufacturers of rods, reels, and other fishing tackle. Known as the Federal Aid in Sport Fish Restoration Act.

Emergency Wetlands Resources Act (1986)—Promoted wetland conservation for the public benefit to help fulfill international obligations in various migratory bird treaties and conventions. Authorized the purchase of wetlands with Land and Water Conservation Fund monies.

Endangered Species Act (1973), as amended—Required all Federal agencies to carry out programs for the conservation of threatened and endangered species.

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. Responsibilities of the office include developing and supporting programs to improve understanding of the natural and developed environment and the relationships between humans and their environment, supporting the dissemination of educational materials, developing and supporting training programs and environmental education seminars, managing a Federal grant program, and administering an environmental internship and fellowship program. Required the office to develop and support environmental programs in consultation with other Federal natural resource management agencies including the Service.

Executive Order 7295 (1936)—Established Bowdoin National Wildlife Refuge "as a refuge and breeding ground for migratory birds and other wildlife."

Executive Order 7713 (1937)—Established Lake Thibadeau National Wildlife Refuge "as a refuge and breeding ground for migratory birds and other wildlife."

Executive Order 7801 (1938)—Established Black Coulee National Wildlife Refuge "as a refuge and breeding ground for migratory birds and other wildlife."

Executive Order 7833 (1938)—Established Hewitt Lake National Wildlife Refuge "as a refuge and breeding ground for migratory birds and other wildlife."

Executive Order 8924 (1941)—Established Creedman Coulee National Wildlife Refuge "as a refuge and breeding ground for migratory birds and other wildlife."

Executive Order 11644, Use of Off-road Vehicles on Public Lands (1972)—Provided policy and procedures for regulating off-road vehicles.

Executive Order 11988, Floodplain Management (1977)—Required Federal agencies to provide leadership and take action to reduce the risk of flood loss, minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains. Prevented 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, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains."

Executive Order 11990, Protection of Wetlands (1977)—Directed 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 12996, Management and General Public Use of the National Wildlife Refuge System (1996)—Defined the mission, purpose, and priority public uses of the Refuge System; presented four principles to guide management of the Refuge System.

Executive Order 13007, Indian Sacred Sites (1996)—Directed Federal land management agencies to accommodate access to and ceremonial uses 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 13443, Facilitation of Hunting Heritage and Wildlife Conservation (2007)—Directed 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.

Federal Noxious Weed Act (1990)—Required the use of integrated management systems to control or contain undesirable plant species and an interdisciplinary approach with the cooperation of other Federal and State agencies.

Federal Records Act (1950)—Required 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 1972—Required any applicant for a Federal license or permit to conduct any activity that may result in a discharge into navigable waters to obtain a certification from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over navigable waters at the point where the discharge originates or will originate, that the discharge will comply with applicable effluent limitations and water quality standards. Required that a certification obtained for construction of any facility must also pertain to subsequent operation of the facility.

Section 404: Authorized the Secretary of the Army, acting through the Chief of Engineers, to issue permits, after notice and opportunity for public hearing, for discharge of dredged or fill material into navigable waters of the United States, including wetlands, at specified disposal sites. Required selection of disposal sites be in accordance with guidelines developed by the Administrator of the Environmental Protection Agency in conjunction with the Secretary of the Army. Stated that the Administrator can prohibit or restrict use of any defined area as a disposal site whenever she or he determines, after notice and opportunity for public hearings, that discharge of such materials into such areas will have an unacceptable adverse effect on municipal water supplies, shellfish beds, fishery areas, wildlife, or recreational areas.

Fish and Wildlife Act (1956)—Directed the Secretary of the Interior to develop the policies and procedures necessary for carrying out fish and wildlife laws and to research and report on fish and wildlife matters. Established the U.S. Fish and Wildlife Service within the Department of the Interior, as well as the positions of Assistant Secretary for Fish and Wildlife and Director of the Service.

Fish and Wildlife Coordination Act (1958)—Allowed the U.S. Fish and Wildlife Service to enter into agreements with private landowners for wildlife management purposes.

Fish and Wildlife Improvement Act of 1978—Improved 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. Authorized the Secretary to accept gifts and bequests of real and personal property on behalf of the United States. Authorized the use of volunteers for Service projects and appropriations to carry out volunteer programs.

Historic Sites, Buildings and Antiquities Act (1935), known as the Historic Sites Act, as amended (1965)—Declared a national policy to preserve historic sites and objects of national significance, including those located at refuges and districts. Provided procedures for designation, acquisition, administration, and protection of such sites and for designation of national historic and natural landmarks.

Land and Water Conservation Fund Act of 1965—Provided money from leasing bonuses, production royalties, and rental revenues for offshore oil, gas, and sulphur extraction to the Bureau of Land Management, the USDA Forest Service, the U.S. Fish and Wildlife Service, and State and local agencies for purchase of lands for parks, open space, and outdoor recreation.

Migratory Bird Conservation Act (1929)—Established procedures for acquisition by purchase, rental, or gifts of areas approved by the Migratory Bird Conservation Commission.

Migratory Bird Hunting and Conservation Stamp Act (1934)—Authorized the opening of part of a refuge to waterfowl hunting.

Migratory Bird Treaty Act (1918)—Designated the protection of migratory birds as a Federal responsibility and enabled the setting of seasons and other regulations including the closing of areas, Federal or non-Federal, to the hunting of migratory birds.

Mineral Leasing Act (1920), as amended—Authorized and governed leasing of public lands for development of deposits of coal, oil, gas and other hydrocarbons, sulphur, phosphate, potassium and sodium. Section 185 provided for granting of rights-of-way over Federal lands for pipelines.

National Environmental Policy Act (1969)—Required all agencies including the Service to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Required Federal agencies to integrate this act with other planning requirements and prepare appropriate documents to facilitate better environmental decisionmaking (40 CFR 1500).

National Historic Preservation Act (1966), as amended—Established policy that the Federal Government is to provide leadership in the preservation of the Nation's prehistoric and historical resources.

National Wildlife Refuge System Administration Act (1966)—Defined the National Wildlife Refuge System and authorized the Secretary of the Interior to permit any use of a refuge, provided such use is compatible with the major purposes for which the refuge was established.

National Wildlife Refuge System Improvement Act of 1997—Set the mission and administrative policy for all refuges in the National Wildlife Refuge System. Mandated comprehensive conservation planning for all units of the Refuge System.

National Wildlife Refuge System Volunteer and Community Partnership Enhancement Act of 1998—Encouraged the use of volunteers to help the Service in the management of refuges within the Refuge System. Facilitated partnerships between the Refuge System and non-Federal entities to promote public awareness of the resources of the Refuge System and public participation in the conservation of those resources. Encouraged donations and other contributions by persons and organizations to the Refuge System.

Native American Graves Protection and Repatriation Act (1990)—Required Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

North American Wetlands Conservation Act (1989)—Provided for the conservation of North American wetland ecosystems, waterfowl and other migratory birds, fish, and wildlife that depend on such habitats.

Pittman–Robertson Act (1937)—Taxed the purchase of ammunition and firearms and earmarks the proceeds to be distributed to the States for wildlife restoration. Known as the Federal Aid in Wildlife Restoration Act or P–R Act.

Refuge Recreation Act (1962)—Allowed the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient money are available to manage the uses.

Refuge Revenue Sharing Act, *section 401* (1935)—Provided for payments to counties in lieu of taxes using revenues derived from the sale of products from refuges.

Refuge Trespass Act of June 28, 1906—Provided the first Federal protection for wildlife at national wildlife refuges. Made it unlawful to hunt, trap, capture, willfully disturb, or kill any bird or wild animal, or take or destroy the eggs of any such birds, on any lands of the United States set apart or reserved as refuges or breeding grounds for such birds or animals by any law, proclamation, or Executive order, except under rules and regulations of the Secretary. Protected Government property on such lands.

Rehabilitation Act (1973)—Required programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal Government to ensure that any person can participate in any program.

Salt Cedar and Russian Olive Control Demonstration Act (2006)—Furthered the purposes of the Reclamation Projects Authorization and Adjustment Act of 1992 by directing the Secretary of the Interior, acting through the Commissioner of Reclamation, to carry out an assessment and demonstration program to control saltcedar and Russian olive, and for other purposes.

Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948—Provided that, on 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.

U.S. Department of the Interior Order Number 3226 (2001)—Directed bureaus and offices of the Department to analyze the potential effects on climate change when undertaking long-range planning, setting priorities for scientific research, and making major decisions about use of resources.

Volunteer and Community Partnership Enhancement Act (1998)—Encouraged the use of volunteers to help in the management of refuges within the Refuge System. Facilitated partnerships between the Refuge System and non-Federal entities to promote public awareness of the resources of the Refuge System and public participation in the conservation of the resources and encouraged donations and other contributions.

Wilderness Act of 1964—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 the Refuge System and National Park Service for inclusion in the National Wilderness Preservation System.

Appendix B

List of Preparers, Consultation, and Coordination

This document is the result of extensive, collaborative, and enthusiastic efforts by the members of the planning team shown below.

Team member	*Position*	*Work unit*
Mike Artmann	Wildlife biologist and GIS specialist	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Division of Refuge Planning, Lakewood, Colorado
Mike Dailey	Hydrologist, planner	Montana Department of Natural Resources and Conservation, Glasgow, Montana
Paula Gouse	Wildlife refuge specialist	Charles M. Russell National Wildlife Refuge Complex, Fort Peck, Montana
James Graham	*Former* wetland district manager (*Current* supervisory wildlife refuge specialist)	Bowdoin National Wildlife Refuge Complex, Malta, Montana (Agassiz National Wildlife Refuge, Middle River, Minnesota)
Stan Jones	Hydrologist	Montana Department of Natural Resources and Conservation, Helena, Montana
Laura King	Planning team leader	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Division of Refuge Planning, Moiese, Montana
Carmen Luna	Refuge manager	Bowdoin National Wildlife Refuge Complex, Malta, Montana
Jana Mohrman	Hydrologist	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Division of Water Resources, Lakewood, Colorado
Deb Parker	Writer-editor	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Division of Refuge Planning, Lakewood, Colorado
John Simpson	Hydrologist	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Division of Water Resources, Lakewood, Colorado
Kathy Tribby	*Former* refuge operations specialist (*Current* outdoor recreation planner)	Bowdoin National Wildlife Refuge Complex, Malta, Montana (Bureau of Land Management, Malta, Montana)
Dean Yashan	Watershed management section supervisor	Montana Department of Environmental Quality, Helena, Montana

Many organizations, agencies, and individuals provided invaluable assistance with the preparation of this CCP. The Service acknowledges the efforts of the following individuals and groups toward the completion of the plan. The diversity, talent, and knowledge contributed dramatically improved the vision and completeness of this document.

Team member	*Position*	*Work unit*
Bruce Barbour	*Former* private lands biologist	U.S. Fish and Wildlife Service, Malta, Montana
Rick Coleman	Assistant regional director, National Wildlife Refuge System	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Lakewood, Colorado
Jack Cunningham	Hydraulic engineer	Bureau of Reclamation, Denver, Colorado
John Esperance	*Former* branch chief of Comprehensive and Land Protection Planning	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Lakewood, Colorado
Ned Euliss	Research biologist	U.S. Geological Survey, Jamestown, North Dakota
Sheri Fetherman	Chief, Division of Education and Visitor Services	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Lakewood, Colorado
Vanessa Fields	Wildlife biologist	Benton Lake National Wildlife Refuge, Great Falls, Montana
Robert Gleason	Director	U.S. Geological Survey, Jamestown, North Dakota
Bill Greiman	Agricultural engineer	Montana Department of Natural Resources and Conservation, Helena, Montana
Ann Harrie	Fish standards specialist	Montana Department of Environmental Quality, Helena, Montana
Shannon Heath	Outdoor recreation planner	U.S. Fish and Wildlife Service, Helena, Montana
Jeff King	Project leader	National Bison Range, Moiese, Montana
Wayne King	Wildlife biologist	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Lakewood, Colorado
Lisa Kusnierz	Water quality planner	Montana Department of Environmental Quality, Helena, Montana
Rachel Laubhan	Wildlife biologist	U.S. Fish and Wildlife Service, Stafford, Kansas
Brant Loflin	Zone archaeologist	U.S. Fish and Wildlife Service, Spearfish, South Dakota
David Lucas	Chief, Division of Refuge Planning	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Lakewood, Colorado
Rod McNeil	Environmental science specialist, aquatic ecologist	Montana Department of Environmental Quality, Helena, Montana
Karen Nelson	Toxicologist	U.S. Fish and Wildlife Service, Ecological Services, Helena, Montana
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Mark Rodney	Hydrologist	U.S. Fish and Wildlife Service, Lakewood, Colorado
Richard Roy	Wildlife biologist	Malheur National Wildlife Refuge, Princeton, Oregon
Dean Rundle	Refuge supervisor	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Lakewood, Colorado
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Bob Skinner	Wildlife biologist	Charles M. Russell National Wildlife Refuge, Lewistown, Montana
Michael Spratt	*Former* chief, Division of Refuge Planning	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Lakewood, Colorado

Team member	*Position*	*Work unit*
Mark Sullivan	Wildlife management biologist	Montana Fish, Wildlife & Parks, Glasgow, Montana
Brian Tangen	Research biologist	U.S. Geological Survey, Jamestown, North Dakota
Kate Thompson	*Former* biological science technician (wildlife)	Bowdoin National Wildlife Refuge Complex, Malta, Montana
Meg Van Ness	Regional archaeologist	U.S. Fish and Wildlife Service, Mountain–Prairie Region, Lakewood, Colorado
Matthew Walker	Area biologist	Natural Resources Conservation Service, Great Falls, Montana
Jay Weiner	Legal counsel	Montana Reserved Water Rights Compact Commission, Helena, Montana
Harold Wentland	Wildlife biologist	Montana Fish, Wildlife & Parks; Glasgow, Montana

Appendix C

Public Involvement

A notice of intent to prepare the draft comprehensive conservation plan and environmental assessment was published in the Federal Register on May 14, 2007. The Service compiled a mailing list of more than 170 names during pre-planning. The list includes private citizens; local, regional, and State government representatives and legislators; other Federal agencies; and interested organizations. Public scoping began immediately after publication of the notice of intent and was announced through news releases and issuance of the first planning update to the mailing list. Information was provided on the history of the refuge complex and the CCP process, along with an invitation to a public scoping meeting. Each planning update included a comment form to give the public an opportunity to provide written comments. Emails were also accepted at the refuge complex's email address: bowdoin@fws.gov.

One public scoping meeting was held in Malta, Montana, on May 22, 2007. There were more than 25 attendees, primarily local citizens and surrounding ranchers. Following a presentation about the refuge complex and an overview of the CCP and the National Environmental Policy Act processes, attendees were encouraged to ask questions and offer comments. Verbal comments were recorded and each attendee was given a comment form to submit additional thoughts or questions in writing.

All written comments were due June 30, 2007; 15 emails and letters were received in addition to the verbal comments recorded at the public scoping meeting. All comments were shared with the planning team and considered throughout the planning process.

As part of the CCP process, the planning team set up a salinity team to address the most critical issue to both the refuge complex and the public—increased salinity and blowing salts on Bowdoin National Wildlife Refuge. The salinity team worked for almost 2 years on the issue, which included a yearlong study by a contractor to develop alternatives for addressing this problem. On October 22, 2009, the planning team held a public meeting to provide information about the results of this effort and resulting alternatives. The public had an opportunity to ask questions and offer suggestions about the various aspects of the alternatives. To notify the public about this meeting, more than 170 meeting announcements were mailed out to the planning mailing list on September 24, 2009. Media outlets were sent a news release, and staff provided interviews to statewide newspapers. Several people helped prepare for the meeting and were there to answer questions: (1) Service staff from the Bowdoin Refuge, the regional Division of Refuge Planning, and the regional Division of Water Resources; and (2) the Montana Department of Natural Resources and Conservation and Department of Environmental Quality, including members of the Montana Reserved Water Rights Compact Commission. Thirty individuals attended this meeting and provided comments, which were recorded. These comments were considered by the planning team in the preparation of this draft CCP and EA, particularly chapter 6, which addresses the salinity and blowing salts problem.

C.1 Federal Officials

U.S. Representative Dennis Rehberg, Washington, DC
U.S. Senator John Tester, Washington, DC
U.S. Senator Max Baucus, Washington, DC

C.2 Federal Agencies

Bureau of Land Management, Malta, Montana
Bureau of Reclamation, Billings, Montana
National Park Service, Omaha, Nebraska
Natural Resource Conservation Service, Malta, Montana
U.S. Geological Service, Fort Collins Science Center, Fort Collins, Colorado
U.S. Geological Service, Jamestown, North Dakota

C.3 Tribal Officials

Blackfeet Nation, Browning, Montana
Chippewa Cree Tribe, Box Elder, Montana
Crow Tribe of Indians, Crow Agency, Montana
Fort Belknap Tribal Council, Harlem, Montana
Fort Peck Tribal Council, Poplar, Montana

C.4 State Officials

Attorney General's Office, Helena, Montana
Governor Brian Schweitzer, Helena, Montana
Representative Tony Belcourt, Box Elder, Montana
Representative Kristin Hansen, Havre, Montana
Representative John Musgrove, Havre, Montana
Representative Wayne Stahl, Saco, Montana
Representative Wendy Warburton, Havre, Montana
Senator John Brenden, Scobey, Montana
Senator Rowlie Hutton, Havre, Montana
Senator Jonathan Windy Boy, Box Elder, Montana

C.5 State Agencies

Farm Services Agency, Malta, Montana
Montana Department of Environmental Quality, Helena, Montana
Montana Department of Natural Resources and Conservation, Glasgow, Montana
Montana Department of Natural Resources and Conservation, Great Falls, Montana
Montana Department of Natural Resources and Conservation, Havre, Montana
Montana Department of Natural Resources and Conservation, Helena, Montana
Montana Department of Tourism, Helena, Montana
Montana Fish, Wildlife & Parks Commissioner, District 4, Scobey, Montana
Montana Fish, Wildlife & Parks Director, Helena, Montana
Montana Fish, Wildlife & Parks, Glasgow, Montana
Montana Fish, Wildlife & Parks, Malta, Montana
Montana Historical Society and Preservation Office, Helena, Montana

C.6 Local Government

Blaine County Commissioners, Chinook, Montana
Glasgow Irrigation District, Glasgow, Montana
Hill County Commissioners, Havre, Montana
Malta Irrigation District, Malta, Montana
Mayor of Malta, Malta, Montana
Phillips County Commissioners, Malta, Montana
Valley County Commissioners, Glasgow, Montana

C.7 Organizations

American Bird Conservancy, The Plains, Virginia
American Prairie Foundation, Malta, Montana
American Rivers, Washington, DC
American Wildlands, Bozeman, Montana
Audubon Society, Helena, Montana
Audubon Society, New York, New York
Audubon Society, Washington, DC
Beyond Pesticides, Washington, DC
Blue Goose Alliance, Tallahassee, Florida
Burlington Northern Railway, Havre, Montana
CARE Group, Washington, DC
Defenders of Wildlife, Washington, DC
Ducks Unlimited, Clancy, Lewistown, Montana
Ducks Unlimited, Memphis, Tennessee
Fund for Animals, New York, New York
Gallatin Valley Pheasants Forever, Bozeman, Montana
The Humane Society, Washington, DC
Isaac Walton League, Gaithersburg, Maryland
Malta Area Chamber of Commerce, Malta, Montana
Montana Department of Tourism, Helena, Montana
Montana Natural Heritage Program, Helena, Montana
Montana National Wildlife Federation, Helena, Montana
Montana Salinity Control Association, Conrad, Montana
National Trappers Association, New Martinsville, West Virginia
National Wildlife Federation, Reston, Virginia
National Wildlife Refuge Association, Washington, DC
The Nature Conservancy, Boulder, Colorado
The Nature Conservancy, Helena, Montana
North American Nature Photography Association, Wheat Ridge, Colorado
Phillips County Historical Society, Malta, Montana
St. Mary Rehabilitation Working Group, Glasgow, Montana
Sierra Club, San Francisco, California
The Wilderness Society, Washington, DC
Wildlife Management Institute, Bend, Oregon
Wildlife Management Institute, Fort Collins, Colorado
Wildlife Management Institute, Washington, DC
The Wildlife Society, Townsend, Montana
World Wildlife Fund, Bozeman, Montana

C.8 Universities and Schools

Colorado State University Libraries, Fort Collins, Colorado
Malta Elementary School, Malta, Montana
Malta High School, Malta, Montana
Northwestern University, Evanston, Illinois

C.9 Media

Billings Gazette Online, Billings, Montana
The Billings Outpost, Billings, Montana
Fort Belknap News, Harlem, Montana
The Glasgow Courier, Glasgow, Montana
Great Falls Tribune, Great Falls, Montana
Havre Daily News, Havre, Montana
KLAN Radio, Glasgow, Montana
KLTZ Radio, Glasgow, Montana
KMMR Radio, Malta, Montana
Montana Public Radio, Missoula, Montana
News Media Broadcasters, Havre, Montana
Phillips County News, Malta, Montana
Yellowstone Public Radio, Billings, Montana

C.10 Individuals

81 private individuals

Appendix D

Draft Compatibility Determinations

D.1 Refuge Complex Name

Bowdoin National Wildlife Refuge Complex:

- Bowdoin National Wildlife Refuge
- Black Coulee National Wildlife Refuge
- Creedman Coulee National Wildlife Refuge
- Hewitt Lake National Wildlife Refuge
- Lake Thibadeau National Wildlife Refuge
- Bowdoin Wetland Management District

D.2 Dates Established

February 14, 1936
August 1, 1958
January 28, 1938
October 25, 1941
March 7, 1938
September 23, 1937

D.3 Establishing and Acquisition Authorities

7 U.S.C. § 1000, 1006, 1010–13, July 22, 1937 (Bankhead–Jones Farm Act)
16 U.S.C. § 715(d), Migratory Bird Conservation Act
16 U.S.C. § 718(c), Migratory Bird Hunting and Conservation Stamp
Executive Order 7295, February 14, 1936
Executive Order 7713, September 23, 1937
Executive Order 7801, January 28, 1938
Executive Order 7833, March 7, 1938
Executive Order 8592, November 12, 1940
Executive Order 8924, October 25, 1941
Public Law 85–585, August 1, 1958
Secretarial Order 2843, November 17, 1959

D.4 Refuge Complex Purposes

The establishing and acquisition authorities set out the purposes for each unit of the refuge complex, as described below.

Bowdoin National Wildlife Refuge

- "As a refuge and breeding ground for migratory birds and other wildlife; "[…] and that such part of said lands as the Secretary of Agriculture may deem proper be reserved for use as a shooting area to be operated under a cooperative agreement or lease with the Montana State Game Commission or such other operating agency as may be approved. The reservation of these lands as a migratory waterfowl refuge is subject to the use thereof by [the Department of the Interior] for irrigation and other incidental purposes."*Executive Order 7295, February 14, 1936*

- As "a refuge and breeding ground for migratory birds and other wildlife […] subject to their use pursuant to the reclamation laws, and for the purpose of oil and gas development […] and for purposes incidental thereto." *Executive Order 8592, November 12, 1940*

- For "any other management purpose, for migratory birds." *Migratory Bird Conservation Act*

Black Coulee National Wildlife Refuge

- For "water conservation, drought relief, and for migratory bird and wildlife conservation purposes […] wildlife conservation demonstration unit and closed refuge and reservation for migratory birds and other wildlife." *Three refuge and flowage easements, 1937–38*

- As "a refuge and breeding ground for migratory birds and other wildlife." *Executive Order 7801, January 28, 1938*

Creedman Coulee National Wildlife Refuge

- For "water conservation, drought relief, and for migratory bird and wildlife conservation purposes […] wildlife conservation demonstration unit and closed refuge and reservation for migratory birds and other wildlife." *Eight refuge and flowage easements, 1937–39*
- As "a refuge and breeding ground for migratory birds and other wildlife." *Executive Order 8924, October 25, 1941*

Hewitt Lake National Wildlife Refuge

- For "water conservation, drought relief, flood control, stock water, migratory waterfowl and wildlife conservation purposes […] and operate and maintain a closed refuge for migratory birds and other wildlife." *Section 16 land; revocable easement signed August 30, 1938*
- For "water conservation, drought relief, and for migratory bird and wildlife conservation purposes *[…]* wildlife conservation demonstration unit and closed refuge and reservation for migratory birds and other wildlife." *Two refuge and flowage easements, 1937–38*
- As "a refuge and breeding ground for migratory birds and other wildlife […] nothing herein shall affect the disposition of the oil and gas deposits therein." *Executive Order 7833. March 7, 1938*
- For "purposes of a land conservation and land utilization program." *Bankhead–Jones Farm Tenant Act*
- For "use and administration under applicable laws as refuges for migratory birds and other wildlife." *Secretarial Order 2843, November 17, 1959*

Lake Thibadeau National Wildlife refuge

- For "water conservation, drought relief, and for migratory bird and wildlife conservation purposes […] wildlife conservation demonstration unit and closed refuge and reservation for migratory birds and other wildlife." *Thirteen refuge and flowage easements, 1937–38*
- As "a refuge and breeding ground for migratory birds and other wildlife." *Executive Order 7713, September 23, 1937*

Bowdoin Wetland Management District

- As "Waterfowl Production Areas subject to […] all of the provisions of such Act [*Migratory Bird Conservation Act*] […] except the inviolate sanctuary provisions." *Migratory Bird Hunting and Conservation Stamp*
- For "any other management purpose, for migratory birds." *Migratory Bird Conservation Act*

D.6 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.

D.7 Description of Uses

The following uses are evaluated for compatibility within the Bowdoin National Wildlife Refuge Complex:

- Recreational hunting
- Recreational fishing
- Wildlife observation and noncommercial photography
- Environmental education and interpretation

- Cooperative farming, haying, and grazing
- Commercial filming, audio recording, and still photography
- Research and monitoring

Recreational Hunting

Recreational hunting is identified as a wildlife-dependent recreational use under the Improvement Act. In addition to the site-specific regulations mentioned below, the State hunting regulations would apply to all Service-owned lands in the refuge complex. Hunters may only possess and use Service-approved, nontoxic shot loads on Service-owned lands, and vehicle travel and parking is restricted to public roads, pullouts, and parking areas. The refuge complex Web site and public use brochures would provide guidance on site-specific regulations. The general hunting regulations are available from Montana Fish, Wildlife & Parks.

The CCP proposes to continue the hunting uses described for each unit below. In addition, the Service would add the following to improve recreational hunting opportunities within the refuge complex:

- The eastern portion of Bowdoin National Wildlife Refuge would be closed to all foot traffic from the beginning of the waterfowl hunting season through November 30 to provide continued sanctuary for waterfowl and shorebirds. Although the auto tour route would remain open through this portion of the refuge, visitors would have to remain inside their vehicles outside of the hunting areas.

- On Black Coulee National Wildlife Refuge, the Service would improve public access to compatible wildlife-dependent activities, including hunting, by developing the entrance road and parking for the reservoir.

Bowdoin National Wildlife Refuge. Public hunting of migratory birds (ducks, geese, coot, swan, sandhill crane, and mourning dove) and upland game birds (ring-necked pheasant, sharp-tailed grouse, greater sage-grouse, and gray partridge) would be permitted on the western portion (approximately 40 percent) of Bowdoin National Wildlife Refuge excluding the railroad right-of-way and around the residences, shop, and maintenance areas, or where otherwise posted. Upland game bird hunters must wear at least one item of blaze orange clothing above the waist.

Limited hunting of fox and coyote would be permitted through issuance of a special use permit from the refuge manager on Bowdoin Refuge. Only centerfire rifles, rimfire rifles, or shotguns with Service-approved nontoxic shot would be permitted.

Big game hunting would not be permitted on Bowdoin National Wildlife Refuge. Bowdoin Refuge may not be used to access adjoining land for big game hunting except the Pearce and Beaver Creek WPAs. Using the refuge to access adjoining land to retrieve a big game animal would not be allowed unless approved and the hunter was accompanied by a refuge employee or State game warden.

Shooting from roads would be prohibited. If a hunter must retrieve a dead or injured game bird from a closed area, they may not carry their firearm with them.

An accessible boat dock, a pier, and a parking area would be available at the west boat launch on Lake Bowdoin. Hunters on Bowdoin National Wildlife Refuge would be required to sign in and out at the hunter registration kiosk. Brochures with current public use regulations would be available at the registration kiosk and from the refuge's Web site.

Since 2002, the portion of the refuge normally closed to hunting (along the eastern boundary) has been opened to upland game bird hunting throughout the month of December with the first 2 days of the special opening being limited to youth hunters only. Since waterfowl generally remain at Bowdoin Refuge until the wetlands freeze up, the opening of the late-season, upland game bird hunt would be contingent on waterfowl being gone by November 30 to avoid further disturbance to these migratory birds.

Black Coulee National Wildlife Refuge. A portion of the land within the refuge boundary is private land and hunters wishing to gain access to this inholding must get permission from the landowner. The refuge would be otherwise open to hunting of migratory birds (duck, goose, coot, swan, sandhill crane, and mourning dove), upland game (ring-necked pheasant, sharp-tailed grouse, greater sage-grouse, gray partridge, red fox, and coyote), and big game according to State regulations.

Creedman Coulee National Wildlife Refuge. Most of the land within the refuge boundary is private land encumbered by a refuge or flowage easement. Hunters wishing to gain access must get permission from the landowner. The refuge would be otherwise open to hunting of migratory birds (duck, goose, coot, swan, sandhill crane, and mourning dove), upland game (pheasant, sharp-tailed grouse, greater sage-grouse, gray partridge, red fox, and coyote), and big game according to State regulations.

Hewitt Lake National Wildlife Refuge. A portion of the land within the refuge boundary is private land encumbered by refuge and flowage easement. Hunters wishing to gain access to these areas must get permission from the landowner. The refuge would be

otherwise open to hunting of migratory birds (duck, goose, coot, swan, sandhill crane, and mourning dove), upland game (pheasant, sharp-tailed grouse, greater sage-grouse, gray partridge, red fox, and coyote), and big game according to State regulations.

Lake Thibadeau National Wildlife Refuge. Most of the land within the refuge boundary is private land encumbered by refuge and flowage easements. Hunters wishing to gain access must get permission from the landowner. The refuge would be otherwise open to hunting of migratory birds (duck, goose, coot, swan, sandhill crane, and mourning dove), upland game (ring-necked pheasant, sharp-tailed grouse, greater sage-grouse, gray partridge, red fox, and coyote), and big game according to State regulations.

Bowdoin Wetland Management District. Except for the Holm WPA, all waterfowl production areas within the Bowdoin Wetland Management District would be open to hunting of migratory birds, upland game, furbearers, and big game. Big game hunting at the McNeil Slough WPA would be restricted to archery, muzzleloader, and shotgun only. An accessible hunting and photography blind and parking area would be provided at the Pearce WPA. Unless otherwise noted, all Service lands open to hunting would be subject to State hunting regulations and seasons.

Availability of Resources

Existing programs such as current refuge directional signs and brochures could be updated with available resources. Maintenance of access roads, parking, hunting and information kiosks, and public use signs is closely tied to Service Asset Maintenance Management System funding. The refuge complex's base funding would fund the update and printing of existing and new brochures.

Additional law enforcement staff and resources would be required (1) to manage significant changes to the hunting program to minimize disturbance to wildlife and habitat, and (2) to monitor compliance with public use and hunting regulations.

Anticipated Impacts of Use

The hunting program on Service lands in the refuge complex would continue to provide hunters ample quality hunting opportunities without materially detracting from the mission of the Refuge System and goals or establishing purposes of the refuge complex lands. Public use brochures and the refuge Web site would be kept up-to-date and made readily available to hunters. Hunter success and satisfaction would continue to be monitored using the hunter registration kiosk sign-in sheet along with random contacts with hunters in the field and in the refuge complex office.

Hunting is considered by many to be a legitimate, traditional, recreational use of renewable natural resources. The National Wildlife Refuge System Act of 1966, other laws, and the Fish and Wildlife Service's policy permit hunting on a national wildlife refuge when it is compatible with the purposes for which the refuge was established and acquired. National wildlife refuges exist primarily to safeguard wildlife populations through habitat preservation. The word "refuge" includes the idea of providing a haven of safety for wildlife, and as such, hunting might seem an inconsistent use of the National Wildlife Refuge System. However, habitat that normally supports healthy wildlife populations produces harvestable surpluses that are a renewable resource. As practiced on Bowdoin National Wildlife Refuge Complex, hunting does not pose a threat to the wildlife populations and, in some instances, is actually necessary for sound wildlife management. By its very nature, hunting creates a disturbance to wildlife and directly impacts the individual animals being hunted. However, it is well recognized that this activity has given many people a deeper appreciation of wildlife and a better understanding of the importance of conserving their habitat, which has ultimately contributed to the Refuge System mission. Furthermore, despite the potential impacts of hunting, a goal of the refuge complex is to provide opportunities for quality wildlife-dependent recreation. Hunting would be designed and monitored to offer a safe and quality program and to keep adverse effects within acceptable limits.

Although hunting directly impacts the hunted species and may indirectly disturb other species, limits on harvest and access for recreational hunting would ensure that populations do not fall to unsustainable levels. Closed areas on the refuge complex provide sanctuary to migratory birds during the hunting season. In some cases, hunting can be used as a management tool to control elevated populations that are having a negative effect on wildlife habitat.

Additional impacts from hunting activity include conflicts with individuals participating in wildlife-dependent, priority public uses such as wildlife observation and photography. Closing the eastern portion of Bowdoin Refuge to foot traffic during the migratory bird hunting season could lead to more crowding and conflicts between hunters and nonhunters. This could decrease the visitors' satisfaction during the hunting season if different users are restricted to the same portions of the refuge. Additional staff time and resources would be required to manage this program.

Determination

Recreational hunting would be a compatible use on Bowdoin National Wildlife Refuge Complex.

Stipulations Necessary to Ensure Compatibility

- Visitors participating in recreational hunting would follow the Service's public use regulations, including site-specific regulations, and the State's hunting regulations.
- Hunters would continue to use approved nontoxic shot for migratory and upland game bird hunting on Service-owned lands.
- Vehicles would be restricted to county and public roads and parking areas in the refuge complex.
- Signage and brochures would be used to provide hunters information on where and how to hunt on the refuge complex to ensure compliance with public use regulations.

Justification

One of the secondary goals of the National Wildlife Refuge System is to provide opportunities, when found compatible, for the public to develop an understanding and appreciation for wildlife. Hunting is identified as a priority public use in the National Wildlife Refuge System Improvement Act of 1997 and would help meet the above secondary goal with only minimal conflicts. Recreational hunting can instill, in citizens of all ages, a greater appreciation for wildlife and its habitat. This appreciation may extend to the Refuge System and other conservation agencies.

Based on anticipated biological impacts described above and in the environmental assessment, the Service has determined that recreational hunting within the refuge complex would not interfere with the Service's habitat goals and objectives or purposes for which the refuges and district were established. Limiting access and monitoring the use could help limit any adverse effects. Except for the Holm WPA, all lands and waters within the wetland management district would be open to hunting in accordance with the Migratory Bird Hunting and Conservation Stamp Act, under which they were acquired.

Mandatory 15-year Reevaluation Date

(Based on date of final plan)

Recreational Fishing

Recreational fishing is defined as a wildlife-dependent recreational use under the Improvement Act. The Service does not actively manage sport fisheries within the Bowdoin National Wildlife Refuge Complex, but recreational fishing opportunities would be available at the McNeil Slough WPA (primarily in the Milk River) and the Beaver Creek WPA (primarily in Beaver Creek). The remaining wetlands within Bowdoin Wetland Management District have only minimal habitat or high salinity levels, or both, and do not support a game fishery. The Bowdoin, Black Coulee, Creedman Coulee, Hewitt Lake, and Lake Thibadeau National Wildlife Refuges would be closed to all fishing to provide refuge for migratory birds. Regardless, wetlands on these refuges do not support game fish due to high salinity levels or minimal or no permanent deepwater habitat.

Anglers have plenty of fishing opportunities within 10–100 miles of the refuge complex including the nearby Nelson Reservoir, Cole Ponds, Milk River, Missouri River, Fort Peck Lake, and stocked ponds on public and private lands.

The draft CCP does not call for the implementation of any new fishing programs.

Availability of Resources

The fishing program could be administered using current resources.

Anticipated Impacts of Use

Fishing and other human activities cause disturbance to wildlife and trampling of vegetation along the bank of rivers and streams. Littering can also become a problem.

Determination

Recreational fishing would not be a compatible use at the Bowdoin, Black Coulee, Creedman Coulee, Hewitt Lake, and Lake Thibadeau National Wildlife Refuges.

Recreational fishing would be a compatible use at waterfowl production areas throughout the Bowdoin Wetland Management District in accordance with State regulations.

Stipulations Necessary to Ensure Compatibility

- Visitors participating in recreational fishing would follow the Service's public use regulations and State fishing regulations and limits.

- Vehicles would be restricted to county and public roads and parking areas on the waterfowl production areas.
- Use of motorized boats would be prohibited.
- Boats, fishing equipment, and all other personal property must be removed at the end of each day.

Justification

Fishing is listed as a priority public use in the Improvement Act. Based on the biological effects addressed above and in the environmental assessment, the Service has determined that recreational fishing would not interfere with the habitat goals and objectives or purposes for establishment of the waterfowl production areas within the refuge complex.

Mandatory 15-year Reevaluation Date

(Based on date of final plan)

Wildlife Observation and Noncommercial Photography

Wildlife observation and photography are both defined as wildlife-dependent recreational uses under the Improvement Act. All lands within the Bowdoin National Wildlife Refuge Complex would be open to these activities although portions of the Black Coulee, Creedman Coulee, Hewitt Lake, and Thibadeau National Wildlife Refuges are private land, and visitors must get permission from the landowners to access those areas. Bowdoin National Wildlife Refuge would continue to provide a 15-mile auto tour route with accompanying interpretive brochure and observation pullouts as well as an accessible photo blind and observation deck on the Display Pond Trail. Pearce WPA would continue to provide an accessible blind with parking and a boardwalk. The refuge complex would continue to provide interpretive brochures and panels, which allow self-guided access to the Bowdoin National Wildlife Refuge, and a bird list that could be used throughout the refuge complex. Public roads, trails, and photography blinds would be maintained as needed. Walk-in access would be allowed anywhere on Bowdoin National Wildlife Refuge and the wetland management district except on the railroad right-of-way and around the residences, shop, and maintenance areas, or where otherwise posted.

Access to the privately owned portions of the Lake Thibadeau, Creedman Coulee, Black Coulee and Hewitt Lake National Wildlife Refuges is by landowner permission only.

The CCP proposes to continue the above wildlife observation and noncommercial photography uses and add the following to improve opportunities for these uses:

- An accessible wildlife observation site and expanded parking area would be added at stop number 5 along the auto tour route. Two permanent spotting scopes and interpretive panels would also be added. At least one spotting scope would be set at a level accessible to visitors in wheelchairs and small children. The panel would describe the natural history of the birds and the area.
- The Service would close the east end of Bowdoin National Wildlife Refuge to all foot traffic at the start of the waterfowl-hunting season at least through November 30, or until waterfowl depart the refuge, to provide sanctuary areas for primarily migratory waterfowl and shorebirds. The auto tour route would remain open but visitors would remain on the auto tour route in designated sanctuary areas.

Availability of Resources

Implementing new facilities outlined in the CCP is closely tied to funding requests submitted as visitor facility enhancement projects through the Service Asset Maintenance Management System. Existing programs such as current directional signs and brochures could be updated with available resources.

Additional staff and resources would be required to manage the increased use to minimize disturbance to wildlife and habitat and to educate photographers and wildlife observers about the local resources and proper wildlife-viewing and photography etiquette.

Anticipated Impacts of the Use

Guided tours of the refuge complex could potentially increase wildlife disturbance, but the presence of Service employees would keep this impact to a minimum, and the opportunity could be used to educate all attendees on proper wildlife-viewing and photography etiquette. Increased visitation could also lead to other short-term impacts such as increased litter and trampled vegetation.

The additional wildlife observation area along the auto tour would provide more opportunities to see birds and other wildlife but from longer distances, causing minimal disturbance. A small concrete pad and spotting scope would be added to an expanded

pulloff to accommodate additional vehicles. The expansion and additions would be minimal and should not cause any impacts.

Sanctuary would be provided for migrating waterfowl and other waterbirds during the waterfowl-hunting season at Bowdoin National Wildlife Refuge. Conflicts between hunters and nonhunters may increase during the hunting season due to closure of the eastern portion of the refuge to foot traffic. Nonhunter satisfaction may decrease due to a reduction in access opportunities. Hunter satisfaction may decrease due to an increase in wildlife disturbance within the hunting zone.

Determination

Wildlife observation and noncommercial photography would be compatible uses on the Bowdoin National Wildlife Refuge Complex.

Stipulations Necessary to Ensure Compatibility

- Visitors participating in wildlife observation and photography would follow all public use regulations. Guided tours would be held where minimal impact to habitat and wildlife would occur.
- Non-Service vehicles would be restricted to county and public access roads in the refuge complex.
- Viewing areas would be designed to minimize disturbance impacts to wildlife and all refuge resources while providing a good opportunity to view wildlife in their natural environments. Visitors using permanent or portable observation and photography blinds would be provided with information on proper use and etiquette of these structures to minimize disturbance to wildlife and their natural environments and other refuge complex visitors.

Justification

One of the secondary goals of the National Wildlife Refuge System is to provide opportunities, when found compatible, for the public to develop an understanding and appreciation for wildlife. Wildlife observation and photography are identified as priority public uses in the National Wildlife Refuge System Improvement Act of 1997 and would help meet the above secondary goal with only minimal conflicts. Wildlife observation and photography can instill, in citizens of all ages, a greater appreciation for wildlife and its habitat. This appreciation may extend to the Refuge System and other conservation agencies.

Based on anticipated biological impacts described above and in the environmental assessment, the Service has determined that wildlife observation and noncommercial photography within the refuge complex would not interfere with the Service's habitat goals and objectives or purposes for which the refuges and district were established. Limiting access and monitoring the uses could help limit any adverse effects.

Mandatory 15-year Reevaluation Date

(Based on date of final plan)

Environmental Education and Interpretation

Environmental education and interpretation are both identified as wildlife-dependent recreational uses under the Improvement Act. All lands within the Bowdoin National Wildlife Refuge Complex would remain open to these activities. These programs have been opportunistic as time and staff allow. Interpretive panels and brochures would be maintained and updated to reflect changes in information or policy and to meet the Service's graphic standards. Portions of the Black Coulee, Creedman Coulee, Hewitt Lake, and Lake Thibadeau National Wildlife Refuges are private land, and visitors must get permission from the landowners to access these areas.

The CCP proposes to continue environmental education and interpretation and add the following to improve these programs:

- The Service would expand the opportunities for environmental education and interpretation to foster appreciation and understanding of the National Wildlife Refuge System and the resources of the Bowdoin National Wildlife Refuge Complex. Additional interpretive panels would be developed for the refuge complex and an accessible observation site with spotting scopes would be developed along the auto tour route at Bowdoin National Wildlife Refuge. The mammal, reptile and amphibian lists would be updated for the refuge complex and a brochure would be developed.
- The Service would develop a Friends group and work with the Malta Chamber of Commerce and Phillips County Historical Society to develop informational kiosks and interpretive displays for the refuge complex that would be placed in the town of Malta.

- Many of the proposed actions would be contingent on recruiting a visitor services specialist to develop and carry out these additional programs.

Availability of Resources

Funding for environmental education and interpretation activities, directional signs, and brochures would be mainly supported by annual operation and maintenance money. Funding from other sources such as grants, regional project proposals, challenge cost-share agreements, and other temporary funding sources would also be sought and used as they became available.

Funding requests for new facilities would be submitted as visitor facility enhancement projects through the Service Asset Maintenance Management System.

Anticipated Impacts of the Use

The use of the refuge complex for onsite activities by groups of teachers and students for environmental education or interpretation may impose a short-term, low-level impact on the immediate and surrounding area. Impacts may include trampling of vegetation and temporary disturbance to nearby wildlife species during the activities.

Refuge complex brochures, interpretive panels, and other educational materials would continue to be updated as needed to meet Service requirements. Features such as the auto tour route and accessible observation sites would continue to provide access to the many sights and sounds of the refuge complex.

The Service would continue to promote a greater public understanding and appreciation of the refuge complex resources, programs, and issues through interpretive, outreach, and environmental educational programs. Working with the Friends group and other local groups, the Service would continue to provide environmental education and interpretation both on and off Service lands. Presentations, both on and off Service lands, would be provided to refuge visitors, school groups, and organizations, allowing the Service to reach a broader audience. Onsite presentations would be managed to minimize disturbance to wildlife, habitat, and cultural resources.

Determination

Environmental education and interpretation would be compatible uses on Bowdoin National Wildlife Refuge Complex.

Stipulations Necessary to Ensure Compatibility

- Visitors participating in environmental education and interpretation programs would follow all Service regulations. Onsite activities would be held where minimal impact to wildlife and habitats would occur.

- The Service would review new environmental education and interpretation activities to ensure these activities meet program objectives and are compatible.

Justification

One of the secondary goals of the National Wildlife Refuge System is to provide opportunities, when found compatible, for the public to develop an understanding and appreciation for wildlife. Environmental education and interpretation are identified as priority public uses in the National Wildlife Refuge System Improvement Act of 1997 and would help meet the above secondary goal with only minimal conflicts. Environmental education and interpretation would be used to encourage an understanding in citizens of all ages to act responsibly in protecting wildlife and its habitat. These are tools used in building a land ethic, developing support of the refuge complex, and decreasing wildlife violations.

Environmental education is an important tool for the refuge complex to provide visitors with an awareness of its purposes, values, and specific issues such as wetland ecology, water quality, impacts of nonnative species, and migratory bird management. This tool would also provide visitors and students a greater understanding of the mission and importance of the National Wildlife Refuge System to the American people.

Based on anticipated biological impacts described above and in the environmental assessment, the Service has determined that environmental education and interpretation on the refuge complex would not interfere with the Service's habitat goals and objectives or purposes for which the refuges and district were established. Limiting access and monitoring the uses could help limit any adverse effects.

Mandatory 15-year Reevaluation Date

(Based on date of final plan)

Cooperative Farming, Haying, and Grazing

The Service would continue to use cooperative farming, haying, and prescriptive livestock grazing as management tools throughout the refuge complex. These tools would be used to meet habitat objectives, control vegetative litter, promote native plant production and diversity, control the spread of invasive plant species, and help convert disturbed grasslands back to native plant species.

Farming and Haying. The Bowdoin Refuge and Bowdoin District currently use cooperative farming and haying as tools to manage upland habitats, including control of invasive plant species and cattails. The Service would enter into an agreement with a local landowner to (1) help restore cropland and poor quality habitat to quality grassland habitat for wildlife, or (2) cut and remove DNC to rejuvenate vegetation growth. A farming cooperator would be issued a cooperative farming agreement or special use permit by the refuge manager and allowed to till seed, harvest small grain, control invasive plants, or harvest hay on Service-owned lands. The agreement generally would be issued for a 2- to 4-year management prescription.

Cooperative farming of Service lands is usually done on a share basis where the Service and the cooperator each receive a share of the crop. The Service would retain its share as standing cover for wildlife forage or in exchange for additional work from the cooperator such as invasive plant control, grass seeding, or provision of supplies such as herbicides and fence materials for habitat protection and improvement on the management unit. Any fees or cash income received by the Service would be deposited in the Refuge Revenue Sharing Account.

The draft CCP proposes to continue using cooperative farming and haying to manage habitats. Furthermore, the draft CCP establishes goals and objectives for specific habitat types where cooperative farming and haying may be used. In addition, the Service has identified target wildlife species (for example, northern pintail and Sprague's pipit) and their habitat requirements. This has resulted in objectives that would guide management to achieve the habitat needs of these target species. The refuge complex would improve the monitoring and research programs for vegetation and wildlife to assess habitat and wildlife population responses to cooperative farming and haying.

Grazing. The refuge complex currently uses prescriptive livestock grazing as a tool to manage a variety of uplands and seasonal wetlands. Grazing by livestock has been a preferred management tool because the effect on habitat is controllable and measurable. Livestock grazing has been used in a variety of ways including high intensity–short duration, rest rotation, and complete rest. Grazing may occur throughout the year as management needs dictate. Where applicable, a rotation schedule using multiple grazing units is used to manage grazing intensity.

Fencing and controlling livestock is the responsibility of the cooperating rancher. The Service provides instruction and guidance within the special use permit for placement of fences, water tanks, and livestock supplements to ensure that sensitive habitats or refuge complex assets are protected. A temporary electric fence is used where there isn't an existing fence. Current forage conditions, habitat objectives, and available water would determine stocking rates in each grazing unit. Two stock water wells exist on the eastern portion of Bowdoin Refuge but are in need of rehabilitation before they can be used again by livestock.

The draft CCP proposes to continue using prescriptive livestock grazing to meet habitat objectives. Furthermore, the draft CCP establishes goals and objectives for specific habitat types where prescriptive livestock grazing may be used. In addition, the Service has identified target wildlife species (for example, northern pintail and Sprague's pipit) and their habitat requirements, which has resulted in objectives that would guide the prescriptive grazing program to achieve the habitat needs of these target species. The refuge complex would improve the monitoring and research programs for vegetation and wildlife to assess habitat and wildlife population responses to prescriptive livestock grazing. Different grazing rates and management strategies would be investigated to determine the best methods for meeting the habitat goals and objectives.

Availability of Resources

Existing resources would be sufficient to administer the farming, haying, and grazing programs at current levels. These programs would continue to be conducted through special use permits or cooperative farming agreements, which minimize the need for staff time and Service assets to complete work. A refuge complex biologist would be needed to plan and oversee monitoring and research of to assess the impacts and effectiveness of these management programs. One temporary biological technician would be necessary to carry out the on-the-ground monitoring.

Rehabilitation of existing stock water wells and drilling of additional wells in strategic locations would increase the effectiveness of the grazing pro-

gram and reduce the impacts caused by livestock watering in wetlands and canals and by cooperators hauling water to grazing cells on a daily basis.

Anticipated Impacts of the Use

The cooperative farming and haying program and prescriptive livestock-grazing program would be used to meet habitat- and species-specific goals and objectives identified in the draft CCP. These programs are intended to maintain and enhance habitat conditions for the benefit of a wide variety of migratory birds and other wildlife that use the refuge complex. Minimal negative effects are expected through the use of these tools. Control of invasive plant species through these programs would be a long-term benefit.

Some wildlife disturbance would occur during operation of noisy farming equipment and some animals may be temporarily displaced. Wildlife would receive the short-term benefit of standing crops or stubble for food and shelter and the long-term benefit of having cropland or other poor-quality habitat converted to native grasses or DNC. In addition, restoration of cropland to grassland cover would prevent soil erosion, improve water quality, and the need for chemical use.

Some trampling of areas by livestock may occur around watering areas or mineral licks. If fences are not maintained, it may be difficult to meet habitat objectives. It is anticipated that grazing would be in a mosaic pattern with some areas more intensively grazed than others in certain years. Grazing, as well as fire, is known to increase the nutrient cycling of nitrogen and phosphorous (Hauer and Spencer 1998, McEachern et al. 2000, Burke et al. 2005). Hoof action may break up mats of clubmoss and allow native plant seeds to become established. However, cattle grazing would also increase the risk of invasive plants getting established. Grazing in the spring could have adverse effects to grassland-bird nests due to trampling and loss of vegetation. In addition, the presence of livestock would be disturbing to some wildlife species and some public users. The long-term benefits of this habitat management tool should outweigh the short-term negative effects.

Determination

Cooperative farming, haying, and grazing as a habitat management tools would be compatible uses on Bowdoin National Wildlife Refuge Complex.

Stipulations Necessary to Ensure Compatibility

- To ensure consistency with management objectives, the Service would require general and specific conditions for each farming, haying, or grazing permit.

- Only areas that have a prior crop history, an invasive plant problem, or decadent DNC would be included in the farming and haying program. To minimize impacts to nesting birds and other wildlife, the refuge manager would determine and incorporate any needed timing constraints on the permitted activity into the cooperative farming agreement or special use permit. For example, haying would not permitted on Service lands until after August 1 to avoid destroying bird nests on the management unit unless the refuge manager deems it necessary to hay earlier to control invasive plants or restore grasslands.

- The cooperative farming agreement or special use permit would specify the type of crop to be planted. Farming permittees would be required to use Service-approved chemicals that are less detrimental to wildlife and the environment.

- Control and confinement of livestock are the responsibility of the permittee, but the Service would determine where fences, water tanks, and livestock supplements would be placed within the management unit. Temporary electric fence would be used to retain livestock within grazing cells as well as to protect sensitive habitat areas and refuge complex assets such as water control structures or water quality-monitoring wells. Cooperators would be required to remove fences at the end of the grazing season.

- Grazing fees would be based on the current-year USDA Statistics Board publication for Grazing Fee Rates for Cattle by Selected States and Regions, as provided annually by the regional office. Standard deductions for labor associated with the grazing permit would be included on the special use permit.

- The refuge complex would carry out a vegetation-monitoring program to assess if habitat requirements of target species are being met. A minimum of one temporary biological technician would be necessary to monitor and document these activities. A biologist would be necessary to plan and oversee the monitoring program and assess the impacts and effectiveness of these management programs.

Justification

Some habitat management needs to occur to maintain and enhance habitat for migratory birds and other wildlife. When properly managed and monitored, prescriptive farming and haying are options that can be used to improve wildlife cover and restore disturbed habitats to desirable grassland cover. Prescriptive livestock grazing can rejuvenate native grasses and help control the spread of some invasive plant species. Each of these tools can be controlled and the results would be monitored (for example, vegetation monitoring) so that adjustments in the programs can be made to meet habitat goals and objectives.

Using local cooperators to accomplish the work is a cost-effective method to accomplish the habitat objectives. The long-term benefits of habitat restoration and management far outweigh the short-term impacts caused by cooperative farming, haying, and grazing.

Mandatory 15-year Reevaluation Date

(Based on date of final plan)

Commercial Filming, Audio Recording, and Still Photography

Commercial filming is the digital or film recording of a visual image or sound (audio) recording, and commercial still photography is the capture of a still image on film or in a digital format—by a person, business, or other entity for a market audience such as for a documentary, television, feature film, advertisement, or similar project. It does not include news coverage or visitor use.

Bowdoin National Wildlife Refuge Complex provides tremendous opportunities for commercial filming and still photography of migratory birds and other wildlife. Each year, the refuge complex staff receives one to three requests to conduct commercial filming or photography on Service lands. The staff would continue to evaluate each request on an individual basis, and if the use were allowed, the requesting individual or group would be issued a special use permit. The permit would designate what areas may be accessed and what activities are and are not allowed, to minimize the possibility of damage to cultural or natural resources or interference with other visitors (refer to "Stipulations Necessary to Ensure Compatibility").

Permittees would be able to access all areas of the refuge complex that are open to the public and must abide by all public use regulations. In rare cases and through the special use permit process, the Service may permit access to areas closed to the public.

Availability of Resources

The commercial filming, audio recording, and still photography uses could be administered with current resources. Administrative costs for review of applications, issuance of special use permits, and staff time to conduct compliance checks may be offset by a fee system designated in a proposed rule that would modify the commercial filming and still photography policy for the agencies within the Department of the Interior. This proposed rule is currently in the public review process (Federal Register, Volume 72, Number 160, August 20, 2007).

Anticipated Impacts of Use

Wildlife filmmakers and photographers tend to create the greatest disturbance of all wildlife observers (Dobb 1998, Klein 1993, Morton 1995). While observers frequently stop to view wildlife, photographers are more likely to approach the animals (Klein 1993). Even a slow approach by photographers tends to have behavioral consequences to wildlife (Klein 1993). Photographers often remain close to wildlife for extended periods in an attempt to habituate the subject to their presence (Dobb 1998). Furthermore, photographers with low-power lenses tend to get much closer to their subjects (Morton 1995). This usually results in increased disturbance to wildlife as well as habitat including the trampling of plants. Handling of animals and disturbing vegetation (such as cutting plants and removing flowers) or cultural artifacts is prohibited on Service lands.

Issuance of special use permits with strict guidelines and followup by refuge complex staff for compliance could help minimize or avoid these impacts. Permittees who do not follow the stipulations of their special use permits could have their permits revoked, and further applications for filming or photographing on refuge complex lands would be denied.

Determination

Commercial filming, audio recording, and still photography would be compatible uses on Bowdoin National Wildlife Refuge Complex.

Stipulations Necessary to Ensure Compatibility

- Commercial filming or still photography must (1) demonstrate a means to extend public appreciation and understanding of wildlife or natural habitats, (2) enhance education, appreciation, and understanding of the National Wildlife Refuge System, or (3) facilitate outreach and education goals of the refuge complex. Failure to demonstrate any of these criteria would result in a special use permit being denied.

- All commercial filming would require a special use permit that would (1) identify conditions that protect the refuge complex's values, purposes, resources, and public health and safety, and (2) prevent unreasonable disruption of the public's use and enjoyment of the refuge complex. Such conditions may be, but are not limited to, specifying road conditions when access would not be allowed, establishing time limitations, and identifying routes of access. These conditions would be identified to prevent excessive disturbance to wildlife, damage to habitat or refuge complex infrastructure, or conflicts with other visitor services or management activities.

- The special use permit would stipulate that imagery produced on refuge complex lands would be made available for use in environmental education and interpretation, outreach, internal documents, or other suitable uses. In addition, any commercial products must include appropriate credits to the Bowdoin National Wildlife Refuge Complex, the Refuge System, and the Service.

- Still photography requires a special use permit (with specific conditions as outlined above) if one or more of the following would occur:

  - It takes place at locations where or when members of the public are not allowed.

  - It uses models, sets, or prop that are not part of the location's natural or cultural resources or administrative facilities.

  - The Service would incur additional administrative costs to monitor the activity.

  - The Service would need to provide management and oversight to avoid impairment of the resources and values of the site, limit resource damage, or minimize health and safety risks to the visiting public.

- To minimize the impact on Service lands and resources, the refuge complex staff would ensure that all commercial filmmakers and commercial still photographers (regardless of whether a special use permit is issued) comply with policies, rules, and regulations. The staff would monitor and assess the activities of all filmmakers, audio recorders, and still photographers.

Justification

Commercial filming, audio recording, and still photography are economic uses that must contribute to the achievement of the refuge complex purposes, mission of the Refuge System, or the mission of the Service. Providing opportunities for these uses should result in an increased public awareness of the refuge complex's ecological importance as well as advancing the public's knowledge and support for the Refuge System and the Service. The stipulations outlined above and conditions imposed in the special use permits issued to commercial filmmakers, audio recorders, and still photographers would ensure that these wildlife-dependent activities occur with minimal adverse effects to resources or visitors.

Mandatory 15-year Reevaluation Date

(Based on date of final plan)

Research and Monitoring

The Bowdoin National Wildlife Refuge Complex receives one to three requests each year to conduct scientific research or monitoring on Service lands. Priority is given to studies that contribute to the enhancement, protection, preservation, and management of the refuge complex's native plant, fish, and wildlife populations and their habitats. Non-Service applicants must submit a proposal that outlines the following:

- Objectives of the study

- Justification for the study

- Detailed methodology and schedule

- Potential impacts on wildlife and habitat including disturbance (short- and long-term), injury, or mortality

- Description of measures the researcher would take to reduce disturbances or impacts

- Staff required and their qualifications and experience
- Status of necessary permits such as scientific collection permits and endangered species permits
- Costs to the Service including staff time requested, if any
- Anticipated progress reports and end products such as reports or publications
- Refuge complex staff or others, as appropriate, would review research proposals case-by-case and issue special use permits if approved. Criteria for evaluation would include, but not be limited to, the following:
- Research that would contribute to specific refuge complex management issues would be given higher priority over other requests.
- Research that would conflict with other ongoing research, monitoring, or management programs would not be approved.
- Research that would cause undue disturbance or would be intrusive would likely not be approved. The degree and type of disturbance would be carefully weighed when evaluating a research request.
- Proposals would be evaluated to determine if any effort was made to minimize disturbance through study design including adjusting location, timing, number of permittees, study methods, and number of study sites.
- The length of the project would be considered and agreed on before approval.

Availability of Resources

Current resources would be adequate to administer the research and monitoring on a very limited basis. A refuge complex biologist would be necessary to administer large and long-term projects, which generally require more indepth evaluation of applications, management of permits, and oversight of research projects. The biologist would identify research and monitoring needs and work with other Service staff, universities, and scientists to develop studies that would benefit the refuge complex and address the goals and objectives in the draft CCP.

Anticipated Impacts of Use

Some degree of disturbance would be expected with all research activities, since researchers may use Service roads or enter areas that are closed to the public; in addition, some research may require collection of samples or handling of wildlife. However, minimal impact on wildlife and habitats would be expected with research studies, because special use permits would include conditions to ensure that impact to wildlife and habitats are kept to a minimum.

Determination

Research and monitoring would be compatible uses on Bowdoin National Wildlife Refuge Complex.

Stipulations Necessary to Ensure Compatibility

- Extremely sensitive wildlife habitats and species would be sufficiently protected from disturbance by limiting research activities in these areas. All refuge complex rules and regulations would be followed unless otherwise exempted by refuge complex management. Projects would be reviewed annually.
- Refuge complex staff would use the above criteria for evaluating and determining whether to approve a proposed study. If research methods were determined to have potential impacts on habitat or wildlife, it must be demonstrated that the research was necessary for conservation management of resources on the refuge complex. Measures to minimize potential impacts would need to be developed and included as part of the study design; these measures would be conditions on the special use permit.
- Refuge complex staff would monitor research activities for compliance with conditions of the special use permit. At any time, refuge complex staff may accompany the researchers to determine potential impacts. Staff may determine that previously approved research and special use permits be terminated due to observed impacts. The refuge manager would also have the ability to cancel a special use permit if the researcher was out of compliance or to ensure wildlife and habitat protection.

Justification

Potential impacts of research activities on refuge complex resources would be minimized through re-

strictions included as part of the study design, and research activities would be monitored by the refuge complex staff. Results of research projects would contribute to the understanding, enhancement, protection, preservation, and management of the refuge complex's wildlife populations and their habitats.

Mandatory 15-year Reevaluation Date

(Based on date of final plan)

D.8 Signatures

Submitted by:

Carmen Luna, Project Leader — Date
Bowdoin National Wildlife Refuge Complex
Malta, Montana

Approved by:

Richard A. Coleman, Ph.D. — Date
Assistant Regional Director
U.S. Fish and Wildlife Service
Mountain–Prairie Region
National Wildlife Refuge System
Lakewood, Colorado

Reviewed by:

Dean Rundle, Refuge Supervisor — Date
U.S. Fish and Wildlife Service
Mountain–Prairie Region
National Wildlife Refuge System
Lakewood, Colorado

Appendix E

Divestiture Model Results for Lake Thibadeau National Wildlife Refuge

During the CCP process, the Service identified Lake Thibadeau National Wildlife Refuge as a candidate for removal from the National Wildlife Refuge System through divestiture (the selling or release of Service interests). The refuge was evaluated by the planning team, regional office, and the refuge manager to determine whether it warranted continued status as a national wildlife refuge. Based on the analysis, the Service is recommending that Lake Thibadeau National Wildlife Refuge be considered for divestiture.

This 3,840-acre limited-interest refuge is primarily private land encumbered by flowage and refuge easements acquired by the Government in the 1930s. The Service has the right to impound water, control uses that occur on that water, and control hunting and trapping. The Service does not have rights to control uses of the uplands or natural wetland basins; these rights would require additional easements or purchase of the land from a willing seller. The 19.4-acre fee-title area is land reserved from public domain by the Bureau of Land Management.

The analysis of Lake Thibadeau Refuge used the Service's Mountain–Prairie Region evaluation model to determine whether to recommend the refuge for divestiture. The divestiture model is a set of criteria for measuring the value of a refuge based primarily on its purposes and the goals of the Refuge System. Designed as a pre-planning tool, the model allows planners and refuge managers to determine whether a refuge or easement refuge should be considered for divestiture. Since use of the model indicated that Lake Thibadeau Refuge should be considered for divestiture, the process and consequences of divestiture were analyzed further during the CCP process and documented under section 3.1 in chapter 3 of the draft CCP.

E.1 The Divestiture Model

Mountain–Prairie Region staff developed the divestiture model during a 2-day workshop held December 14–15, 2004, at the regional office in Lakewood, Colorado. The model standardizes policy in the Mountain–Prairie Region for identifying which refuges to consider for divestiture.

The divestiture model comprises primary criteria (five questions), secondary criteria (three questions), additional considerations, and five rules (to organize answers to criteria questions for determination of whether to consider divestiture). For each criteria question, the answer related to Lake Thibadeau National Wildlife Refuge is stated and followed by a justification.

Primary Criteria

The following five questions compose the primary criteria for evaluating a national wildlife refuge for divestiture.

1. Does the refuge achieve one or more of the goals of the National Wildlife Refuge System?

Answer: No. According to the rules of this model, if the refuge does not achieve one or more goals of the National Wildlife Refuge System, it should automatically be recommended for divestiture.

Justification: Lake Thibadeau National Wildlife Refuge does not meet the goals of the Refuge System as set by Service policy—National Wildlife Refuge System Mission and Goals and Refuge Purposes (June 20, 2006):

A. Conserve a diversity of fish, wildlife, and plants and their habitats, including species that are endangered or threatened with becoming endangered.
B. 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.
C. 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.
D. Provide and enhance opportunities to participate in compatible wildlife-dependent recreation

(hunting, fishing, wildlife observation and photography, and environmental education and interpretation).

E. Foster understanding and instill appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.

The refuge is a reservoir created by a dam in the middle of an arid landscape. It provides little migratory bird habitat, because the watersheds up stream of the reservoir have been heavily developed since its establishment, capturing most of the water. With the absence of permanent vegetative cover around the wetlands, erosion occurs and sediment continues to be added to the wetland basins.

The refuge's ability to function as a water source and habitat for migrating waterbirds is almost gone. In the last 10 years, there has only been one occasion when there was sufficient water collected in the spring to provide habitat; this event provided about 30 acres of water for about 3 months. The historical lakebeds of the refuge would provide this seasonal habitat any time moisture is made available and would function in this capacity even if the area was not a refuge. In addition, the lakebeds are natural sumps, being the lowest points for the surrounding area. Runoff from surrounding farm land finds its way to these locations. Draining or removing this water from these locations is highly unlikely.

The impoundment Lake Thibadeau Refuge is functioning as any other livestock pond in the area (figure 49). Within 10 miles of the refuge are more than 6,500 acres of wetlands including more than 3,000 acres of seasonal or temporarily flooded wetlands in more than 1,300 basins. The impoundment on the refuge does provide some loafing areas for waterfowl, but not of any quality. The mere presence of seasonal water does not make it a refuge.

Conservation implies action, and the Service has no authority to do anything other than impound water when it is available. Hunting is allowed by landowner permission. There are no other opportunities to provide wildlife-dependent recreation or to foster an understanding or appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.

2. Does the refuge meet its purpose (fulfill the refuge's intent and statutory purpose)?

Answer: No.

Justification: The refuge was established in 1937 "as a refuge and breeding ground for migratory birds and other wildlife" (Executive Order 7713). The lands and waters of this area cannot provide the habitat necessary to provide a refuge and breeding ground as found on other Refuge System lands. As described previously, there is a lack of water due to upstream development. The uplands, over which the Service has no authority to manage, are used for agriculture. Only about 8 percent of the upland habitat (about 340 acres) is unbroken ground with the potential to retain some native prairie species. However, 95 percent of this area is in one block and is heavily grazed. The Service has no authority or ability within the easement to control the uses and management of this upland habitat. The remaining uplands of the refuge are intensively farmed.

3. Does the refuge provide substantial support for migratory bird species, important sheltering habitat for threatened and endangered species, or support for species identified in authorizing legislation?

Answer: No.

Justification: The past 30 years of wildlife observations show there has never been substantial use of this refuge by migratory birds.

4a. Does the refuge have biological integrity; if it does not, is it feasible to restore the biological integrity of the converted or degraded habitat?

Answer: No.

Justification: Due to alteration of the natural hydrologic processes in the watershed and the conversion of native grasslands to cropland, the refuge has lost most of the historical biotic composition, structure, and function that define its biological integrity, diversity, and environmental health. Certainly, migratory birds will make use of open-water habitat, and the refuge will at times provide a remnant amount of what historically was present, but this amount of use alone will not bring the biological diversity of the refuge to a level that would meet the purpose of a migratory bird refuge.

Since the refuge has no authority over the uplands, it is unrealistic to expect that this area would be restored to grassland cover by the current landowners. Further, acquisition of this land in either fee title or conservation easement is unlikely given the limited money for these activities and the fact that this location is not a high priority for either type of acquisition.

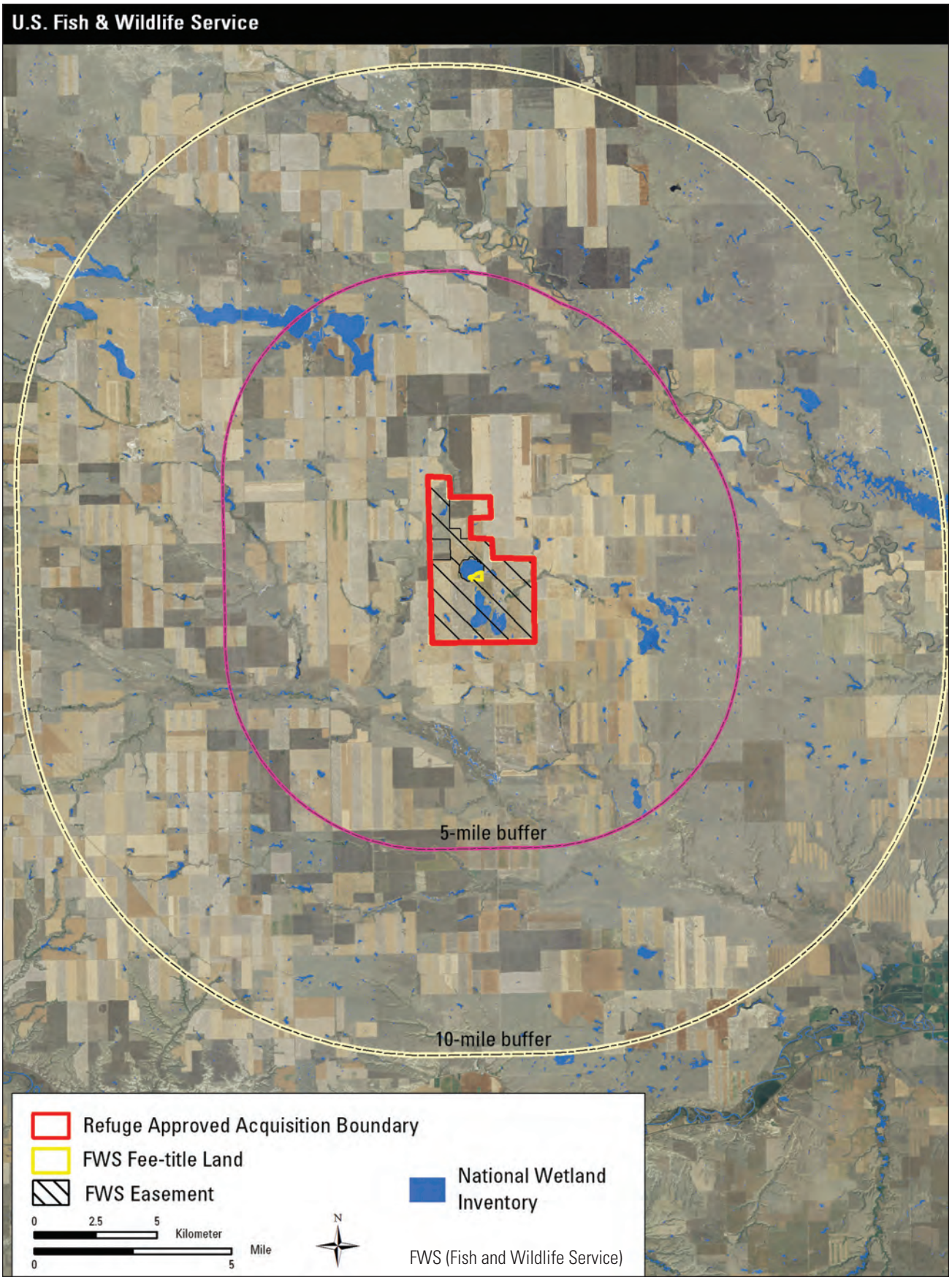

Figure 49. Map of wetlands within 10 miles of Lake Thibadeau National Wildlife Refuge, Montana.

4b. Does the Service have or can it reasonably acquire the right to restore the habitat?

Answer: No.

Justification: The upland habitat is more than 90-percent cropland. Acquiring this land for restoration would not only be expensive, but biological restoration of native prairie in a mixed-grass prairie ecosystem is very difficult. The moisture regime that defines the prairie is arid, so establishing a full complement of prairie species is not likely. Native vegetation exists, but the value has been reduced due to the introduction of invasive plants and the loss of ecological functions.

The Service's water right for the refuge may be enough to provide open-water habitat for migratory birds, given several consecutive good water years. The process to exercise these rights would require an evaluation to determine the extent of retained Service water by dams or diversions in the upstream watersheds. Water rights in north-central Montana are not only very valuable but a necessity for the ranching lifestyle. If the Service were to spend the time and resources trying to pursue this water right, the results would not be worth the effort and would most likely create a legal water rights debate with the upstream landowners. Moreover, restoration of the wetland habitat alone will not raise the level of the biological diversity to achieve the purpose of this refuge.

Expenditure of money to restore biological diversity of critical migratory bird habitat would not be a priority in this location of the refuge complex. There are other areas of higher priority that still have some elements of biological diversity.

5. Does the refuge contribute to landscape conservation, provide a stepping stone for migratory birds, or serve as a unique habitat patch important to the conservation of a trust species?

Answer: No.

Justification: Lake Thibadeau National Wildlife Refuge is not the only water source in the area (see figure 14 in chapter 2). It does not contribute to landscape conservation and is not important for trust species, because it is identical to the surrounding landscape. If the refuge did not exist, migratory birds would not be affected. Creedman Coulee National Wildlife Refuge and other wetlands and stock ponds in the vicinity provide for migrating birds.

Secondary Criteria

These last three questions, although secondary criteria, are also part of the divestiture evaluation.

6. Politics/Community—Is there such significant community interest in and support for the refuge that divestiture would result in unacceptable long-term public relations?

Answer: No.

Justification: All of the landowners holding title to land within the refuge boundary are active ranchers or farmers. It is unlikely that they would be willing to sell the land to the Service as they rely on it to make their living.

7. Jurisdiction—Does the Service have or can it acquire the jurisdiction to meet the refuge's purpose and Refuge System mission and goals and also prevent incompatible uses?

Answer: No.

Justification: Refer to the above justifications for answers to 4a and 4b.

8. Other Land Manager—Could some other party achieve most or all of the purposes of the refuge without the Service having to incur costs?

Answer: No.

Justification: Refer to the above justifications for answers to 4a and 4b.

Additional Considerations

Justification: The dam and water control devises were last inspected in 2007. The diversion dam, which has been designated as a low-hazard dam, received a good evaluation with minor deficiencies. The remaining dams and water control structures would require extensive repair and replacement to bring the system to a functioning level. This repair would be costly to the Service for minimal benefit.

Rules

Five rules organize the answers to the criteria questions and are for determining whether to consider a national wildlife refuge for divestiture.

Rule 1: IF the refuge cannot meet one or more Refuge System goals, the refuge should be considered for divestiture.

This is the rule that applies to Lake Thibadeau National Wildlife Refuge.

> *Since rule 1 is definitive for Lake Thibadeau Refuge, there is no need to apply the other four rules. If rule 1 did not apply, a refuge would be further evaluated using rules 2–5, which address how well a refuge meets the Refuge System goals and refuge purposes, how well a refuge supports trust species, if a refuge possesses biological integrity and connectivity, and if the Service has jurisdiction.*

E.2 Justification

Based on the Service's evaluation using the Mountain–Prairie Region's divestiture model, Lake Thibadeau National Wildlife Refuge should be considered for divestiture. Specifically, under rule 1, the refuge did not meet one or more of the Refuge System goals and, therefore, should be considered for divestiture. The refuge does not meet or minimally meets the refuge purpose. Furthermore, the refuge does not substantially support trust species and does not possess biological integrity.

Appendix F

Species Lists

This appendix contains the common and scientific names of animals and plants of the Bowdoin National Wildlife Refuge Complex. The amphibians, reptiles, and mammals have ranges that encompass the refuge complex. The bird and plant lists are from actual sightings and surveys at the Bowdoin National Wildlife Refuge. Species of concern were determined from global, Federal, and State of Montana listings (Montana Natural Heritage Program 2009a, 2009b).

F.1 List of Amphibian and Reptile Species

The following amphibian and reptile list is based on refuge complex files and listings on the Montana Natural Heritage Program Web site for Phillips, Blaine, and Hill counties. The taxonomic order follows Werner et al. (2004).

Common Name	*Scientific Name*	*Designation*
SALAMANDERS		
Tiger salamander	*Ambystoma tigrinum*	—
FROGS and TOADS		
Plains spadefoot toad	*Spea bombifrons*	Species of concern
Great Plains toad	*Bufo cognatus*	Species of concern
Woodhouse's toad	*Bufo woodhousii*	—
Boreal chorus frog	*Pseudacris maculata*	—
Northern leopard frog	*Rana pipiens*	Species of concern
TURTLES		
Painted turtle	*Chrysemys picta*	—
Spiny softshell	*Apalone spinifera*	Species of concern
LIZARDS		
Greater short-horned lizard	*Phrynosoma hernandesi*	Species of concern
Common sagebrush lizard	*Sceloporus graciosus*	Species of concern
SNAKES		
Eastern racer	*Coluber constrictor*	—
Western hognose snake	*Heterodon nasicus*	Species of concern
Milk snake	*Lampropeltis triangulum*	Species of concern
Gopher snake *or* bullsnake	*Pituophis catenifer*	—
Terrestrial garter snake	*Thamnophis elegans*	—
Plains garter snake	*Thamnophis radix*	—
Common garter snake	*Thamnophis sirtalis*	—
Western rattlesnake	*Crotalus viridis*	—

F.2 List of Fish Species

The following fish list is based on surveys of Beaver Creek and the Bowdoin National Wildlife Refuge intake canal (2000–2003) and staff observations.

Common	*Scientific*	*Designation*
Goldeye	*Hiodon alosoides*	—
Brassy minnow	*Hybognathus hankinsoni*	Potential species of concern
Common carp	*Cyprinus carpio*	Exotic species (not native to Montana)
Spottail shiner	*Notropis hudsonius*	Exotic species (not native to Montana)
Fathead minnow	*Pimephales promelas*	—
River carpsucker	*Carpiodes carpio*	—
White sucker	*Catostomus commersoni*	—
Black bullhead	*Ameiurus melas*	Exotic species (not native to Montana)
Brook stickleback	*Culaea inconstans*	Potential species of concern
Black crappie	*Pomoxis nigromaculatus*	Exotic species (not native to Montana)
Iowa darter	*Etheostoma exile*	Potential species of concern
Yellow perch	*Perca flavescens*	Exotic species (not native to Montana)
Bigmouth buffalo	*Ictiobus cyprinellus*	—
Pumpkinseed	*Lepomis gibbosus*	Exotic species (not native to Montana)
Smallmouth bass	*Micropterus dolomieu*	Exotic species (not native to Montana)
Northern pike	*Esox lucius*	—

F.3 List of Bird Species

The following bird list is based on the Bowdoin National Wildlife Refuge bird list (July 2008); all species have been observed on the refuge. Species names are in accordance with the Montana Natural Heritage Program Web site (Montana Natural Heritage Program 2009a, 2009b). A "B" indicates local breeders, and focal bird species were determined from the focal species strategy of the 2005 U.S. Fish and Wildlife Service Migratory Bird Program.

Common Name	*Scientific Name*	*Designation*
LOONS		
Common loon	*Gavia immer*	Species of concern
GREBES		
Pied-billed grebe	*Podylimbus podiceps*	B
Horned grebe	*Podiceps auritus*	Species of concern, B
Red-necked grebe	*Podiceps grisegena*	—
Eared grebe	*Podiceps nigricollis*	B
Western grebe	*Aechmophorus occidentalis*	B
Clark's grebe	*Aechmophorus clarkii*	Species of concern, B
PELICANS		
American white pelican	*Pelecanus erythrorhynchos*	Species of concern, B
CORMORANTS		
Double-crested cormorant	*Phalacrocorax auritus*	Focal species, B
HERONS		
American bittern	*Botaurus lentiginosus*	Species of concern, B
Great blue heron	*Ardea herodias*	Species of concern, B
Great egret	*Ardea alba*	—
Snowy egret	*Egretta thula*	—
Cattle egret	*Bubulcus ibis*	—
Black-crowned night-heron	*Nycticorax nycticorax*	Species of concern, B
IBIS		
White-faced ibis	*Plegadis chihi*	Species of concern, B
GEESE		
Greater white-fronted goose	*Anser albifrons*	—
Snow goose	*Chen caerulescens*	—
Ross' goose	*Chen rossii*	—
Canada goose	*Branta canadensis*	B
SWANS		
Tundra swan	*Cygnus columbianus*	—
DUCKS		
Wood duck	*Aix sponsa*	Focal species, B
Gadwall	*Anas strepera*	B
Eurasian wigeon	*Anas penelope*	—
American wigeon	*Anas americana*	Focal species, B
Mallard	*Anas platyrhynchos*	Focal species, B

Common Name	Scientific Name	Designation
Blue-winged teal	*Anas discors*	B
Cinnamon teal	*Anas cyanoptera*	B
Northern shoveler	*Anas clypeata*	B
Northern pintail	*Anas acuta*	Focal species, B
Green-winged teal	*Anas crecca*	B
Canvasback	*Aythya valisineria*	B
Redhead	*Aythya americana*	B
Ring-necked duck	*Aythya collaris*	—
Greater scaup	*Aythya marila*	Focal species
Lesser scaup	*Aythya affinis*	Focal species, B
White-winged scoter	*Melanitta fusca*	Focal species
Long-tailed duck	*Clangula hyemalis*	—
Bufflehead	*Bucephala albeola*	B
Common goldeneye	*Bucephala clangula*	B
Barrow's goldeneye	*Bucephala islandica*	Potential species of concern
Hooded merganser	*Lophodytes cucullatus*	Potential species of concern
Common merganser	*Mergus merganser*	—
Red-breasted merganser	*Mergus serrator*	—
Ruddy duck	*Oxyura jamaicensis*	B
NEW WORLD VULTURES		
Turkey vulture	*Cathartes aura*	—
HAWKS and EAGLES		
Osprey	*Pandion haliaetus*	—
Bald eagle	*Haliaeetus leucocephalus*	Species of concern
Northern harrier	*Circus cyaneus*	B
Sharp-shinned hawk	*Accipiter striatus*	—
Cooper's hawk	*Accipiter cooperii*	—
Northern goshawk	*Accipiter gentilis*	Species of concern
Broad-winged hawk	*Buteo platypterus*	—
Swainson's hawk	*Buteo swainsoni*	Species of concern, B
Red-tailed hawk	*Buteo jamaicensis*	B
Ferruginous hawk	*Buteo regalis*	Species of concern, focal species, B
Rough-legged hawk	*Buteo lagopus*	—
Golden eagle	*Aquila chrysaetos*	Species of concern
FALCONS		
American kestrel	*Falco sparverius*	B
Merlin	*Falco columbarius*	—
Peregrine falcon	*Falco peregrinus*	Species of concern, focal species
Prairie falcon	*Falco mexicanus*	—
GALLINACEOUS BIRDS		
Gray partridge	*Perdix perdix*	Exotic (not native to Montana, introduced) species, B
Ring-necked pheasant	*Phasianus colchicus*	Exotic (not native to Montana, introduced) species, B

Common Name	Scientific Name	Designation
Greater sage-grouse	*Centrocercus urophasianus*	Species of concern, B
Sharp-tailed grouse	*Tympanuchus phasianellus*	Species of concern, B
Wild turkey	*Meleagris gallopavo*	Exotic (not native to Montana) species
RAILS		
Yellow rail	*Coturnicops noveboracensis*	Species of concern, focal species
Virginia rail	*Rallus limicola*	B
Sora	*Porzana carolina*	B
American coot	*Fulica americana*	B
CRANES		
Sandhill crane	*Grus canadensis*	B
PLOVERS		
Black-bellied plover	*Pluvialis squatarola*	—
American golden-plover	*Pluvialis dominica*	—
Snowy plover	*Charadrius alexandrinus*	Focal species
Semipalmated plover	*Charadrius semipalmatus*	—
Piping plover	*Charadrius melodus*	Threatened species, species of concern, focal species, B
Killdeer	*Charadrius vociferous*	B
Mountain plover	*Charadrius montanus*	Species of concern. focal species
STILTS and AVOCETS		
Black-necked stilt	*Himantopus mexicanus*	Species of concern, B
American avocet	*Recurvirostra americana*	B
SANDPIPERS		
Greater yellowlegs	*Tringa melanoleuca*	—
Lesser yellowlegs	*Tringa flavipes*	—
Solitary sandpiper	*Tringa solitaria*	—
Willet	*Tringa semipalmatus*	B
Spotted sandpiper	*Actitis macularia*	B
Upland sandpiper	*Bartamia longicauda*	Focal species, B
Whimbrel	*Numenius phaeopus*	—
Long-billed curlew	*Numenius americanus*	Species of concern. focal species, B
Hudsonian godwit	*Limosa haemastica*	Focal species
Marbled godwit	*Limosa fedoa*	Focal species, B
Ruddy turnstone	*Arenaria interpres*	—
Red knot	*Calidris canutus*	—
Sanderling	*Calidris alba*	—
Semipalmated sandpiper	*Calidris pusilla*	—
Western sandpiper	*Calidris mauri*	—
Least sandpiper	*Calidris minutilla*	—
White-rumped sandpiper	*Calidris fuscicollis*	—
Baird's sandpiper	*Calidris bairdii*	—
Pectoral sandpiper	*Calidris melanotos*	—
Stilt sandpiper	*Calidris himantopus*	—

Common Name	Scientific Name	Designation
Short-billed dowitcher	*Limnodromus griseus*	—
Long-billed dowitcher	*Limnodromus scolopaceus*	—
Wilson's snipe	*Gallinago delicata*	B
PHALAROPES		
Wilson's phalarope	*Phalaropus tricolor*	Focal species, B
Red-necked phalarope	*Phalaropus lobatus*	—
GULLS		
Franklin's gull	*Leucophaeus pipixcan*	Species of concern, B
Bonaparte's gull	*Chroicocephalus philadelphia*	—
Ring-billed gull	*Larus delawarensis*	B
California gull	*Larus californicus*	B
Herring gull	*Larus argentatus*	—
TERNS		
Caspian tern	*Hydroprogne caspia*	Species of concern. focal species, B
Common tern	*Sterna hirundo*	Species of concern, focal species, B
Arctic tern	*Sterna paradisaea*	Focal species, B
Forster's tern	*Sterna forsteri*	Species of concern
Black tern	*Chlidonias niger*	Species of concern. focal species, B
DOVES		
Rock pigeon	*Columba livia*	Exotic (not native to Montana, introduced) species
Eurasian collared-dove	*Streptopelia decaocto*	Exotic (not native to Montana, introduced) species, B
Mourning dove	*Zenaida macroura*	Focal species, B
CUCKOOS		
Black-billed cuckoo	*Coccyzus erythropthalmus*	Species of concern, focal species, B
Yellow-billed cuckoo	*Coccyzus americanus*	Species of concern, focal species
OWLS		
Eastern screech-owl	*Megascops asio*	Species of concern, B
Great horned owl	*Bubo virginianus*	B
Snowy owl	*Bubo scandiaca*	—
Burrowing owl	*Athene cunicularia*	Species of concern. focal species, B
Long-eared owl	*Asio otus*	B
Short-eared owl	*Asio flammeus*	Potential species of concern, focal species, B
Northern saw-whet owl	*Aegolius acadicus*	Focal species
NIGHTJARS		
Common nighthawk	*Chordeiles minor*	B
HUMMINGBIRDS		
Ruby-throated hummingbird	*Archilochus colubris*	B
KINGFISHERS		
Belted kingfisher	*Megaceryle alcyon*	—

Common Name	Scientific Name	Designation
WOODPECKERS		
Red-headed woodpecker	*Melanerpes erythrocephalus*	Species of concern, focal species, B
Yellow-bellied sapsucker	*Sphyrapicus varius*	Focal species
Downy woodpecker	*Picoides pubescens*	B
Hairy woodpecker	*Picoides villosus*	B
Northern flicker (yellow-shafted)	*Colaptes auratus auratus*	B
Northern flicker (red-shafted)	*Colaptes auratus cafer*	B
FLYCATCHERS		
Western wood-pewee	*Contopus sordidulus*	B
Willow flycatcher	*Empidonax traillii*	B
Least flycatcher	*Empidonax minimus*	B
Say's phoebe	*Saynoris saya*	B
Western kingbird	*Tyrannus verticalis*	B
Eastern kingbird	*Tyrannus tyrannus*	B
SHRIKES		
Loggerhead shrike	*Lanius ludovicianus*	Species of concern. focal species, B
Northern shrike	*Lanius excubitor*	—
VIREOS		
Warbling vireo	*Vireo gilvus*	—
Red-eyed vireo	*Vireo olivaceus*	—
JAYS, MAGPIES, and CROWS		
Blue jay	*Cyanocitta cristata*	—
Black-billed magpie	*Pica hudsonia*	B
American crow	*Corvus brachyrhynchos*	—
Common raven	*Corvus corax*	—
LARKS		
Horned lark	*Eremophila alpestris*	B
SWALLOWS		
Tree swallow	*Tachycineta bicolor*	B
Northern rough-winged swallow	*Stelgidopteryx serripennis*	B
Bank swallow	*Riparia riparia*	B
Cliff swallow	*Petrochelidon pyrrhonota*	B
Barn swallow	*Hirundo rustica*	B
CHICKADEES		
Black-capped chickadee	*Poecile atricapillus*	B
Mountain chickadee	*Poecile gambeli*	—
NUTHATCHES		
Red-breasted nuthatch	*Sitta canadensis*	—

Common Name	*Scientific Name*	*Designation*
CREEPERS		
Brown creeper	*Certhia americana*	Species of concern
WRENS		
Rock wren	*Salpinctes obsoletus*	—
House wren	*Troglodytes aedon*	B
Winter wren	*Troglodytes troglodytes*	Species of concern
Marsh wren	*Cistothorus palustris*	B
KINGLETS		
Golden-crowned kinglet	*Regulus satrapa*	—
Ruby-crowned kinglet	*Regulus calendula*	—
THRUSHES		
Mountain bluebird	*Sialia currucoides*	—
Townsend's solitaire	*Myadestes townsendi*	—
Veery	*Catharus fuscescens*	Species of concern
Swainson's thrush	*Catharus ustulatus*	—
Hermit thrush	*Catharus guttatus*	—
American robin	*Turdus migratorius*	B
Varied thrush	*Ixoreus naevius*	—
THRASHERS		
Gray catbird	*Dumetella carolinensis*	—
Brown thrasher	*Toxostoma rufum*	B
Northern mockingbird	*Mimus carolinensis*	—
STARLINGS		
European starling	*Sturnus vulgaris*	Exotic (not native to Montana) species, B
PIPITS		
American (water) pipit	*Anthus rubescens*	—
Sprague's pipit	*Anthus spragueii*	Species of concern. focal species, B
WAXWINGS		
Bohemian waxwing	*Bombycilla garrulous*	—
Cedar waxwing	*Bombycilla cedrorum*	B
WARBLERS		
Tennessee warbler	*Vermivora peregrina*	Potential species of concern
Orange-crowned warbler	*Vermivora celata*	—
Yellow warbler	*Dendroica petechia*	B
Yellow-rumped warbler	*Dendroica coronata*	—
Townsend's warbler	*Dendroica townsendi*	—
Blackpoll warbler	*Dendroica striata*	—
American redstart	*Setophaga ruticilla*	—
Ovenbird	*Seiurus aurocapilla*	Species of concern
Northern waterthrush	*Seiurus noveboracensis*	—
Mourning warbler	*Oporornis philadelphia*	—
MacGillivray's warbler	*Oporornis tolmiei*	—

Common Name	Scientific Name	Designation
Common yellowthroat	*Geothlypis trichas*	B
Wilson's warbler	*Wilsonia pusilla*	—
Yellow-breasted chat	*Icteria virens*	—
TANAGERS		
Scarlet tanager	*Piranga olivacea*	—
Western tanager	*Piranga ludoviciana*	—
SPARROWS		
Spotted towhee	*Pipilo maculates*	B
American tree sparrow	*Spizella arborea*	—
Chipping sparrow	*Spizella passerina*	B
Clay-colored sparrow	*Spizella pallida*	B
Brewer's sparrow	*Spizella breweri*	Species of concern, B
Vesper sparrow	*Pooecetes gramineus*	B
Lark sparrow	*Chondestes grammacus*	B
Lark bunting	*Calamospiza melanocorys*	B
Savannah sparrow	*Passerculus sandwichensis*	B
Grasshopper sparrow	*Ammodramus savannarum*	Species of concern. focal species, B
Baird's sparrow	*Ammodramus bairdii*	Species of concern. focal species, B
Le Conte's sparrow	*Ammodramus leconteii*	Species of concern. focal species
Fox sparrow	*Passerelia iliaca*	—
Song sparrow	*Melospiza melodia*	B
Lincoln's sparrow	*Melospiza lincolnii*	—
White-throated sparrow	*Zonotrichia albicollis*	—
Harris' sparrow	*Zonotrichia querula*	—
White-crowned sparrow	*Zonotrichia leucophrys*	—
Golden-crowned sparrow	*Zonotrichia atricapilla*	—
Dark-eyed junco	*Junco hyemalis* subspp.	—
McCown's longspur	*Calcarius mccownii*	Species of concern, B
Lapland longspur	*Calcarius lapponicus*	—
Chestnut-collared longspur	*Calcarius ornatus*	Species of concern. focal species, B
Snow bunting	*Plectrophenax nivalis*	—
GROSBEAKS and BUNTINGS		
Rose-breasted grosbeak	*Pheucticus ludovicianus*	—
Black-headed grosbeak	*Pheucticus melanocephalus*	—
Lazuli bunting	*Passerina amoena*	—
BLACKBIRDS and ORIOLES		
Bobolink	*Dolichonyx oryzivorus*	Species of concern. focal species
Red-winged blackbird	*Agelaius phoeniceus*	B
Western meadowlark	*Sturnella neglecta*	B
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	B
Rusty blackbird	*Euphagus carolinus*	Focal species
Brewer's blackbird	*Euphagus cyanocephalus*	B
Common grackle	*Quiscalus quiscula*	B

Common Name	*Scientific Name*	*Designation*
Brown-headed cowbird	*Molothrus ater*	B
Baltimore oriole	*Icterus galbula*	B
Bullock's oriole	*Icterus bullockii*	B
FINCHES		
Pine grosbeak	*Pinicola enucleator*	—
Cassin's finch	*Carpodacus cassinii*	Species of concern
House finch	*Carpodacus mexicanus*	B
Common redpoll	*Acanthis flammea*	—
Hoary redpoll	*Acanthis hornemanni*	—
Pine siskin	*Spinus pinus*	—
American goldfinch	*Spinus tristis*	B
Evening grosbeak	*Coccothraustes vespertinus*	—
OLD WORLD SPARROWS		
House sparrow	*Passer domesticus*	Exotic (not native to Montana) species, B

F.4 List of Mammal Species

Common Name	*Scientific Name*	*Designation*
SHREWS		
Masked shrew	*Sorex cinereus*	—
Merriam's shrew	*Sorex merriami*	Species of concern
Preble's shrew	*Sorex preblei*	Species of concern
BATS		
Little brown myotis	*Myotis lucifugus*	—
Silver-haired bat	*Lasionycteris noctivagans*	Potential species of concern
Big brown bat	*Eptesicus fuscus*	—
Townsend's big-eared bat	*Corynorhinus townsendii*	Species of concern
Hoary bat	*Lasiurus cinereus*	Species of concern
Western small-footed myotis	*Myotis ciliolabrum*	—
Western long-eared myotis	*Myotis evotis*	—
Spotted bat	*Euderma maculatum*	Species of concern
Eastern red bat	*Lasiurus borealis*	Species of concern
Fringed myotis	*Myotis thysanodes*	Species of concern
Long-legged myotis	*Myotis volans*	—
Yuma myotis	*Myotis yumanensis*	Potential species of concern
HARES and RABBITS		
Mountain cottontail	*Sylvilagus nuttallii*	—
White-tailed jackrabbit	*Lepus townsendii*	—
Snowshoe hare	*Lepus americanus*	—
SQUIRRELS		
Richardson's ground squirrel	*Spermophilus richardsonii*	—
POCKET GOPHERS		
Northern pocket gopher	*Thomomys talpoides*	—
BEAVERS		
Beaver	*Castor canadensis*	—
MICE, RATS, and VOLES		
Western harvest mouse	*Reithrodontomys megalotis*	—
White-footed mouse	*Peromyscus leucopus*	—
Deer mouse	*Peromyscus maniculatus*	—
House mouse	*Mus musculus*	Exotic species (not native to Montana)
Meadow vole	*Microtus pennsylvanicus*	—
Prairie vole	*Microtus ochrogaster*	—
Western jumping mouse	*Zapus princeps*	—
Meadow jumping mouse	*Zapus hudsonius*	Species of concern
Bushytail woodrat	*Neotoma cinerea*	—
Muskrat	*Ondatra zibethicus*	—

Common Name	*Scientific Name*	*Designation*
NEW WORLD PORCUPINES		
Porcupine	*Erethizon dorsatum*	—
CANIDS		
Coyote	*Canis latrans*	—
Red fox	*Vulpes vulpes*	—
Swift fox	*Vulpes velox*	Species of concern
FELIDS		
Bobcat	*Lynx rufus*	—
Mountain lion	*Felis concolor*	—
PROCYONIDS		
Raccoon	*Procyon lotor*	—
MUSTELIDS		
Long-tailed weasel	*Mustela frenata*	—
Least weasel	*Mustela nivalis*	—
Mink	*Mustela vison*	—
Badger	*Taxidea taxus*	—
MEPHITIDS		
Striped skunk	*Mephitis mephitis*	—
CERVIDS		
Mule deer	*Odocoileus hemionus*	—
White-tailed deer	*Odocoileus virginianus*	—
Elk	*Cervus canadensis*	—
Moose	*Alces alces*	—
PRONGHORN		
Pronghorn	*Antilocapra americana*	—

F.5 List of Plant Species

Common Name	Scientific Name
Alfalfa	*Medicago sativa*
Alkali bulrush	*Scirpus maritimus*
Alkali sacaton	*Sporobolus airoides*
American sloughgrass	*Beckmania syzigachne*
American vetch	*Vicia americana*
Arum-leaved arrowhead	*Sagittaria cuneata*
Balkan catchfly	*Silene csereii*
Barnyard grass	*Echinochloa crusgalli*
Beaked sedge	*Carex rostrata*
Bigbract verbena	*Verbena bracteata*
Birch	*Betula papyrifera*
Black bindweed	*Polygonum convovulus*
Black medick	*Medicago lupulina*
Bluebunch wheatgrass	*Pseudoroegneria spicata*
Blue grama	*Bouteloua gracilis*
Blue lettuce	*Lactuca pulchella*
Bottlebrush grass	*Elymus hystrix*
Boxelder	*Acer negundo*
Box knotweed	*Polygonum buxiforme*
Broad-leaf arrowhead	*Sagittaria latifolia*
broom snakeweed	*Gutierrezia serothrae*
Buffaloberry	*Shepherdia argentea*
Buffalograss	*Buchloe dactyloides*
Bull thistle	*Cirsium vulgare*
Bushy knotweed	*Polygonum ramosissimum*
Butter and eggs	*Linaria vulgaris*
Canadian waterweed	*Elodea canadensis*
Canada thistle	*Cirsium arvense*
Canada wild rye	*Elymus canadensis*
Cheatgrass	*Bromus tectorum*
Chokecherry	*Prunus virginiana*
Clasping pepperweed	*Lepidium perfoliatum*
Common bladderwort	*Utricularia vulgaris*
Common cattail	*Typha latifolia*
Common mallow	*Malva neglecta*
Common plantain	*Plantago major*
Common ragweed	*Ambrosia artemisiifolia*
Coontail	*Ceratophyllum demersum*
Crested wheatgrass	*Agropyron cristatum*
Curlycup gumweed	*Grindelia squarrosa*
Cutleaf goldenweed	*Haplopappus spinulosus*

Common Name	Scientific Name
Dandelion	*Taraxacum officianale*
Dewey sedge	*Carex deweyana*
Dotted blazingstar	*Liatris punctata*
Eaton's aster	*Symphyotrichum eatonii*
English plantain	*Plantago lanceolata*
European bur-reed	*Sparganium emersum*
Field bindweed	*Convolvulus arvensis*
Field chickweed	*Cerastium arvense*
Field horsetail	*Equisetum arvense*
Field pennycress	*Thlaspi arvense*
Fireweed	*Chamerion angustifolium*
Flatspine stickseed	*Lappula occidentalis*
Foothill arnica	*Arnica fulgens*
Foxtail barley	*Hordeum jubatum*
Fries' pondweed	*Potamogeton friesii*
Fringed loosestrife	*Lysimachia ciliata*
Fringed sagewort	*Artemisia frigida*
Giant goldenrod	*Solidago gigantea*
Giant red Indian paint-brush	*Castilleja miniata*
Golden currant	*Ribes odoratum*
Golden dock	*Rumex maritimus*
Goosefoot	*Chenopodium* spp.
Greasewood	*Sarcobatus vermiculatus*
Green ash	*Fraxinus pennsylvanica*
Green foxtail	*Setaria viridis*
Green needlegrass	*Stipa viridula*
Green sagewort	*Artemesia dracunculus*
Hairy evening-primrose	*Oenothera strigosa*
Hairy golden-aster	*Chrysopsis villosa*
Hardstem bulrush	*Scirpus acutus*
Heliotrope	*Heliotropium curassavicum*
Horsemint	*Monarda stricta*
Horsetail	*Equisetum fluviatile*
Inland saltgrass	*Distichlis spicata*
Jacob's ladder	*Polemonium pulcherrimum*
Japanese brome	*Bromus japonicus*
Juniper	*Juniperus communis*
Kentucky bluegrass	*Poa pratensis*
Kochia	*Kochia scoparia*
Lambstongue ragwort	*Senecio integerrimus*

Common Name	*Scientific Name*
Leafy spurge	*Euphorbia esula*
Lupine	*Lupinus flexuosus*
Macoun's buttercup	*Ranunculus macounii*
Many-flowered aster	*Symphyotrichum ericoides*
Maximilian sunflower	*Helianthus maximilianii*
Missouri goldenrod	*Solidago missouriensis*
Musk mallow	*Malva moschata*
Narrow-leaf water plantain	*Alisma gramineum*
Narrow-leaved collomia	*Collomia linearis*
Narrow-leaved milkvetch	*Astragalus pectinatus*
Needle and thread	*Stipa comata*
Needle spikerush	*Eleocharis acicularis*
Nodding brome	*Bromus anomalus*
Nodding chickweed	*Cerastium nutans*
Nodding smartweed	*Polygonum lapathifolium*
Northern bedstraw	*Galium boreale*
Orchardgrass	*Dactylis glomerata*
Pale spikerush	*Eleocharis macrostachya*
Pasqueflower	*Pulsatilla patens*
Perennial sowthistle	*Sonchus arvensis*
Pigweed	*Amaranthus retroflexus*
Plains cottonwood	*Populus deltoides*
Ponderosa pine	*Pinus ponderosa*
Povertyweed	*Iva axillaris*
Prairie coneflower	*Ratibida columnifera*
Prairie Junegrass	*Koeleria macrantha*
Prairie rose	*Rosa arkansana*
Prickly pear	*Opuntia polycantha*
Prickly lettuce	*Lactuca serriola*
Proso millet	*Panicum miliaceum*
Prostrate knotweed	*Polygonum aviculare*
Purple prairie clover	*Dalea purpurea*
Purplestem aster	*Symphyotrichum puniceum*
Quackgrass	*Agropyron repens*
Redtop	*Agrostis stolonifera*
Reed canarygrass	*Phalaris arundinacea*
Richardson's pondweed	*Potamogeton richardsonii*
Ridgeseed spurge	*Chamaesyce glyptosperma*
Rocky Mountain beeplant	*Cleome serrulata*
Rubber rabbitbrush	*Chrysothamnus nauseosus*
Rush skeletonweed	*Lygodesmia juncea*
Russian olive	*Elaeagnus angustifolia*
Russian thistle	*Salsola iberica*
Sago pondweed	*Potamogeton pectinatus*

Common Name	*Scientific Name*
Sandbar willow	*Salix interior*
Sandberg bluegrass	*Poa secunda*
Scarlet gaura	*Gaura coccinea*
Scarlet globemallow	*Sphaeralcea coccinea*
Scratchgrass	*Muhlenbergia asperifolia*
Seaside arrowgrass	*Triglochin maritima*
Shortbeak sedge	*Carex brevior*
Showy milkweed	*Asclepias speciosa*
Silver sage	*Artemisia cana*
Silverweed cinquefoil	*Argentina anserina*
Silver cinquefoil	*Potentilla argentea*
Slender lip fern	*Cheilanthes feei*
Slender pondweed	*Potamogeton filiformis*
Silverleaf scurfpea	*Psoralea argophylla*
Small pondweed	*Potamogeton pusilus*
Smartweed	*Polygonum persicaria*
Smooth brome	*Bromus inermis*
Spotted knapweed	*Centaurea stoebe*
Spreading dogbane	*Apocynum androsaemifolium*
Stiff goldenrod	*Oligoneuron rigidum*
Stiff sunflower	*Helianthus pauciflorus*
Stinkgrass	*Eragrostis cilianensis*
Threadleaf crowfoot	*Ranunculus trichophyllus*
Three-square bulrush	*Schoenoplectus pungens*
Timothy	*Phleum pretense*
Tufted phlox	*Phlox caespitosa*
Tumblemustard	*Sisymbrium altissimum*
Watermilfoil	*Myriophyllum exalbescena*
Water plantain	*Alisma plantago-aquatica*
Water starwort	*Collitriche hermadroditica*
Wavyleaf thistle	*Cirsium undulatum*
Western clamy weed	*Polanisia trachysperma*
Western snowberry	*Symphoricarpos occidentalis*
Western waterweed	*Anacharis occidentalis*
Western wheatgrass	*Agropyron smithii*
Western white clematis	*Clematis ligusticifolia*
Western wild rose	*Rosa woodsii*
Western wild-rye	*Elymus glavcus*
Western yarrow	*Achillea millefolium*
White cinquefoil	*Potentilla arguta*
White prairie aster	*Aster ericoides*
White sage	*Artemesia ludoviciana*
Whitetop	*Cardaria draba*

Common Name	*Scientific Name*
Widgeongrass	*Ruppia maitima*
Wild asparagus	*Asparagus officianalis*
Wild buckwheat	*Polygonum convolvulus*
Wild daisy, fleabane	*Erigeron glabellus*
Wild licorice	*Glyzerhiza lepidata*
Wild mint	*Nemtha arvensis*
Wild mustard	*Brassica kaber*
Wild oats	*Averia fatua*
Wild onion	*Allium textile*
Willow	*Salix* spp.
Wire rush	*Juncus balticus*
Wolf berry	*Symphoricarpos orbiculatus*
Woolly plantain	*Plantago patagonica*
Yellow sweetclover	*Melilotus officinalis*
Yellow umbrella plant	*Eriogonum flavum*

Appendix G

Fire Management Program

The Service has administrative responsibility for fire management at Bowdoin National Wildlife Refuge and Bowdoin Wetland Management District, which covers 24,915 acres. Additional fire responsibilities cover the satellite refuges—Black Coulee, Creedman Coulee, Hewitt Lake, and Lake Thibadeau National Wildlife Refuges—which total 1,458 fee-title acres.

G.1 The Role of Fire

In ecosystems of the Great Plains, vegetation has evolved under periodic disturbance and defoliation from grazing, fire, drought, and floods. This periodic disturbance is what kept the ecosystem diverse and healthy while maintaining significant biodiversity for thousands of years.

Historically, natural fire and fires started by Native Americans have played an important disturbance role in many ecosystems by removing fuel accumulations, decreasing the impact of insects and diseases, stimulating regeneration, recycling nutrients, and providing a diversity of habitats for plants and wildlife.

When fire or grazing is excluded from prairie landscapes, the fuel load increases due to the buildup of thatch and expansion of woody vegetation. This increase in fuel loading leads to an increase in a fire's resistance to control, which threatens firefighter and public safety as well as Federal and private lands and facilities. However, fire when properly used can do the following:

- Reduce hazardous fuel buildup in both wildland-urban interface and non–wildland-urban interface areas
- Improve wildlife habitats by reducing the density of vegetation or changing the plant species composition, or both
- Sustain or increase biological diversity
- Improve woodland and shrubland by reducing plant density
- Reduce susceptibility of plants to insect and disease outbreaks
- Improve the quality and quantity of livestock forage
- Increase the quantity of water available for municipalities and activities dependent on water supplies from wildlands

G.2 Wildland Fire Management Policy and Guidance

Based on Federal interagency policy (Fire Executive Council 2009), wildland fire is defined as any nonstructure fire that occurs in the wildland including wildfire and prescribed fire. Response to wildland fire is based on consideration of a full range of fire management actions—allowing the fire to benefit the resource where possible or taking suppression action when those benefits are not attainable or there is a likely risk to important resources or adjacent lands.

Considerations, guidance, and direction for wildland fire management should be addressed in the land use resource plans (for example, this CCP). Fire management plans are stepdown processes from the land use plans and habitat plans and provide details about fire suppression, fire use, and fire management activities.

The 1995 Federal Fire Policy Wildland Fire Management Policy was updated in 2001. This revised policy directs Federal agencies to achieve a balance between fire suppression to protect life, property, and resources and fire use to regulate fuels and maintain healthy ecosystems. The following guiding principles and policy statements are excerpted from this document titled Review and Update of the 1995 Federal Wildland Fire Management Policy; these are the foundational principles for Federal wildland fire management policy.

Guiding Principles

1. Firefighter and public safety is the first priority in every fire management activity.

2. The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
Federal agency land and resource management plans set the objectives for the use and desired future condition of the various public lands.

3. Fire management plans, programs, and activities support land and resource management plans and their implementation.

4. Sound risk management is a foundation for all fire management activities.
Risks and uncertainties relating to fire management activities must be understood, analyzed, communicated, and managed as they relate to the cost of either doing or not doing an activity. Net gain in public benefit will be an important component of decisions.

5. Fire management programs and activities are economically viable, based on values to be protected, costs, and land and resource management objectives.
Federal agency administrators are adjusting and reorganizing programs to reduce costs and increase efficiencies. As part of this process, investments in fire management activities must be evaluated against other agency programs to effectively accomplish the overall mission, set short- and long-term priorities, and clarify management accountability.

6. Fire management plans and activities are based on the best available science.
Knowledge and experience are developed among all Federal wildland fire management agencies. An active fire research program combined with interagency collaboration provides the means to make these tools available to all fire managers.

7. Fire management plans and activities incorporate public health and environmental quality considerations.

8. Federal, State, tribal, local, interagency, and international coordination and cooperation are essential.
Increasing costs and smaller workforces require that public agencies pool their human resources to successfully deal with the ever-increasing and more complex tasks of fire management. Full collaboration among Federal wildland-fire management agencies and between these agencies and international, State, tribal, and local governments and private entities results in a mobile fire management workforce available for the full range of public needs.

9. Standardization of policies and procedures among Federal wildland-fire management agencies is an ongoing objective.
Consistency of plans and operations provides the fundamental platform on which these agencies can cooperate, integrate fire activities across agency boundaries, and provide leadership for cooperation with State, tribal, and local fire management organizations.

G.3 Management Direction

The Bowdoin National Wildlife Refuge Complex and the Eastern Montana Fire District will protect life, property, and other resources by safely suppressing all wildfires.

Prescribed fire, as well as manual and mechanical fuel treatments, would be used in an ecosystem context to protect both Federal and private property and for habitat management purposes. Fuel reduction activities would be applied in collaboration with Federal, State, private, and nongovernmental partners. In addition, the Service would set priorities for fuel treatment based on guidance for prioritization established in the goals and strategies outlined in the following documents: (1) "U.S. Fish and Wildlife Service National Wildlife Refuge System Wildland Fire Management Program Strategic Plan 2003–2010"; and (2) "Region 6 Refuges Regional Priorities FY07–11." For wildland-urban interface treatments, areas with community wildfire protection plans and designated "communities at risk" would be the primary focus. The only community at risk near the refuge complex, as identified in the Federal Register, is the town of Malta. The development of the community wildfire-protection plan for Malta is a current, ongoing process.

All aspects of the fire management program would be conducted consistent with applicable laws, policies, and regulations. Bowdoin National Wildlife Refuge Complex would maintain a fire management plan to accomplish the fire management goals described below. Prescribed fire and manual and

mechanical fuel treatments would be applied in a scientific way under selected weather and environmental conditions.

Fire Management Goals

Fire management goals are set at national, regional, and local levels.

National Fire Management Goals

The goals and strategies of the "U.S. Fish and Wildlife Service National Wildlife Refuge System Wildland Fire Management Program Strategic Plan" are consistent with the following guidance:

- Policies of the Department of the Interior and the Service
- National Fire Plan direction
- The President's Healthy Forest Initiative
- The 10-Year Comprehensive Strategy and Implementation Plan
- National Wildfire Coordinating Group Guidelines
- Initiatives of the Wildland Fire Leadership Council
- Interagency Standards for Fire and Aviation Operations

Regional Fire Management Goals

The "Region 6 Refuges Regional Priorities FY07–11" are consistent with the refuges' vision statement for the Mountain–Prairie Region, "to maintain and improve the biological integrity of the region, ensure the ecological condition of the region's public and private lands are better understood, and endorse sustainable use of habitats that support native wildlife and people's livelihoods."

Refuge Complex Fire Management Goals

The fire management goal for the Bowdoin National Wildlife Refuge Complex is to use prescribed fire and manual and mechanical treatments to (1) reduce the threat to life and property through hazardous-fuel reduction treatments, and (2) meet the habitat goals and objectives identified in this CCP.

Fire Management Objective

Fire is an important natural component in the maintenance and restoration of native prairie and wetland ecosystems, as well as tamegrasses planted for wildlife, such as dense nesting cover. The primary objective of the prescribed fire management program is to reduce fuel loads while restoring and maintaining native prairie and wetland habitats. Prescribed fire would be used to recycle nutrients, reduce or eliminate invasive plants, increase the growth and production of native plants, improve wildlife habitat and nesting cover for migratory birds, and reduce the risk of wildfire.

Achieving this objective would require burning between 500 and 2,000 acres of upland and wetland habitats annually, until every acre has been burned at least once. However, according to the literature, fire must be used cautiously in this arid climate. It is uncertain how often this area historically burned, particularly since the arid climate makes it slow to recover. To determine the need and frequency of using prescribed fire, the Service would review the historical weather patterns; the quality, diversity, and species of vegetation; the presence of invasive species; the habitat needs of target species; and the results of monitoring prior-treatment sites. It is possible that other habitat manipulations would be more appropriate to achieve desired objectives.

Strategies

Strategies and tactics that consider public and firefighter safety, as well as resource values at risk, would be used. Wildfire suppression, prescribed fire methods, manual and mechanical means, timing, and monitoring would be described in detail within the stepdown fire management plans for the refuge complex.

All fire management actions would use prescribed fire and manual or mechanical means to reduce hazardous fuels, restore and maintain desired habitat conditions, control nonnative vegetation, and control the spread of woody vegetation within the diverse ecosystem habitats. The fuel treatment program would be site specific and follow the most recent interagency template for burn plans.

A prescribed fire would temporarily decrease air quality by reducing visibility and releasing components through combustion. The refuge complex would meet the Clean Air Act emission standards by adhering to the Montana requirements during all prescribed fire activities.

G.4 Fire Management Organization, Contacts, and Cooperation

Using the fire management district approach, the Mountain–Prairie Region of the Service would establish qualified technical oversight of fire management for the refuge complex. Under this approach, the level of fire management staffing would be determined by established modeling systems and be based on the fire management workload of a group of refuges and possibly that of interagency partners. Workload is based on historical wildfire suppression activities as well as historical and planned fuel treatments.

Depending on budgets, fire management staff and support equipment may be located at the headquarters of the refuge complex or at other refuges within the district and shared between all units. Fire management activities would be conducted in a coordinated and collaborative manner with Federal and non-Federal partners.

On approval of this CCP, one or more fire management plans would be developed for the refuge complex. The fire management plans may be prepared as (1) plans that cover each individual refuge and wetland management district, (2) a plan that covers the area identified within this CCP, (3) a plan that covers the fire management district, or (4) an interagency fire management plan.

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