U. S. AIR FORCE

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

Minot Air Force Base

(See INRMP signature pages for plan approval date)

ABOUT THIS PLAN

This installation-specific Environmental Management Plan (EMP) is based on the United States Air Force's (USAF) standardized Integrated Natural Resources Management Plan (INRMP) template. This INRMP has been developed in cooperation with applicable stakeholders, which includes Sikes Act cooperating agencies and/or local equivalents, to document how natural resources will be managed. Where applicable, external resources, including Air Force Instructions (AFIs); Department of Defense Instructions (DoDIs); USAF Playbooks; federal, state, and local requirements; Biological Opinions; and permits are referenced.

Certain sections of this INRMP begin with standardized, USAF-wide "common text" language that address USAF and Department of Defense (DoD) policy and federal requirements. This common text language is restricted from editing to ensure that it remains standard throughout all plans. Immediately following the USAF-wide common text sections are installation sections. The installation sections contain installation-specific content to address local and/or installation-specific requirements. Installation sections are unrestricted and are maintained and updated by the approved plan owner.

NOTE: The terms "Natural Resources Manager," "NRM," and "NRM/POC" are used throughout this document to refer to the installation person responsible for the natural resources program, regardless of whether this person meets the qualifications within the definition of a natural resources management professional in DoDI 4715.03, Natural Resources Conservation Program.

TABLE OF CONTENTS

DOCUMENT CONTROL

Standardized INRMP Template

In accordance with (IAW) the Air Force Civil Engineer Center (AFCEC) Environmental Directorate (CZ) Business Rule (BR) 08, *EMP Review, Update, and Maintenance*, the standard content in this INRMP template is reviewed periodically, updated as appropriate, and approved by the Natural Resources Subject Matter Expert (SME).

This version of the template is current as of 04/30/2020 and supersedes the 2015 version.

NOTE: Installations are not required to update their INRMPs every time this template is updated. When it is time for installations to update their INRMPs, they should refer to the eDASH EMP Repository to ensure they have the most current version.

Installation INRMP

Record of Review – The INRMP is updated no less than annually, or as changes to natural resource management and conservation practices occur, including those driven by changes in applicable regulations. IAW the Sikes Act and AFMAN 32-7003, *Environmental Conservation*, the INRMP is required to be reviewed for operation and effect no less than every five years. An INRMP is considered compliant with the Sikes Act if it has been approved in writing by the appropriate representative from each cooperating agency within the past five years. Approval of a new or revised INRMP is documented by signature on a signature page signed by the Installation Commander (or designee), and a designated representative of the United States Fish and Wildlife Service (USFWS), state fish and wildlife agency, and National Oceanic and Atmospheric Administration (NOAA) Fisheries when applicable (AFMAN 32-7003).

Annual reviews and updates are accomplished by the installation Natural Resources Manager (NRM), and/or a Section Natural Resources Media Manager. The installation shall establish and maintain regular communications with the appropriate federal and state agencies. At a minimum, the installation NRM (with assistance as appropriate from the Section Natural Resources Media Manager) conducts an annual review of the INRMP in coordination with internal stakeholders and local representatives of USFWS, state fish and wildlife agency, and NOAA Fisheries, where applicable, and accomplishes pertinent updates. Installations will document the findings of the annual review in an Annual INRMP Review Summary. By signing the Annual INRMP Review Summary, the collaborating agency representative asserts concurrence with the findings. Any agreed updates are then made to the document, at a minimum updating the work plans.

EXECUTIVE SUMMARY

Minot Air Force Base (AFB) occupies about 5090 acres in north-central North Dakota, 15 miles north of Minot, North Dakota and about 40 miles south of the U.S./Canada border. Minot AFB is home to the US Air Force's 5th Bomb Wing and 91st Missile Wing. Minot AFB is a key component of the US Air Force Global Strike Command, whose mission is to develop and provide safe, secure, effective combat-ready forces for nuclear deterrence and global strike operations to support the President of the United States and Combatant Commanders.

Minot AFB is surrounded by a native prairie grasslands ecosystem that was disturbed and largely replaced on the Base. The native soil profiles were cultivated and in some case removed, and the native flora has been mostly replaced, first by agricultural and ranching activities in the first part of the 20th century, and then beginning in the 1950s by military activities. Certain natural resources on Minot AFB, such as vegetation, wildlife, and soils, are an extension of the native prairie and agricultural ecosystem. However, construction and human activities on Minot AFB over the past 40 years have greatly modified the character of Minot AFB's ecosystem. Natural resource management at Minot AFB has historically focused on monitoring mission-related impacts on rare species, stewardship of the installation's significant acreage of open space (including agricultural and grazing where appropriate), and preserving the core ecological functions of the military landscape.

Minot AFB is in the process of significantly expanding mission-related land uses over the next several years in accordance with the recommendations of their Installation Development Plan (IDP). Due in large part to the long history of disturbance across most of the installation, there are relatively few natural resource-related constraints on mission-related activities and development at Minot AFB. Numerous small wetlands are scattered across much of the installation, and it is the Air Force's policy to avoid impacts on wetlands when possible. Wetland-related issues probably present the most significant potential natural resources-related constraint to future land development at Minot AFB. Although rare species have not been documented on the base in the past, the small number of rare species that could occur on base and their potential distributions represent a minor concern with respect to planned activities at the base. Bird/Wildlife Aircraft Strike Hazard (BASH) is a priority at Minot AFB and has the potential to affect operations, but the base has a robust BASH plan in place and will manage future BASH-related challenges in accordance with the established procedures in the existing plan.

The most significant impact of future mission-related activities and development on natural resources at the base is likely to be conversion of open space to industrial and other intensively- developed land uses. Open space occupies a significant proportion of the base's total land area, is a prominent feature in the base's overall landscape, and is vital to support the base's ecology. Future natural resource management programs should emphasize retention of open space and maintenance of the ecosystem services it provides as well as restoration of ecosystem integrity when possible.

1.0 OVERVIEW AND SCOPE

This INRMP was developed to provide for effective management and protection of natural resources. It summarizes the natural resources present on the installation and outlines strategies to adequately manage those resources. Natural resources are valuable assets of the USAF. They provide the natural infrastructure needed for testing weapons and technology, as well as for training military personnel for deployment. Sound management of natural resources increases the effectiveness of USAF adaptability in all environments. The USAF has stewardship responsibility for the physical lands on which installations are located to ensure all natural resources are properly conserved, protected, and used in sustainable ways. The primary objective of the USAF natural resources program is to sustain, restore, and modernize natural infrastructure to ensure operational capability and no net loss in the capability of USAF lands to support the military mission of the installation. The plan outlines and assigns responsibilities for the management of natural resources, discusses related concerns, and provides program management elements that will help to maintain or improve the natural resources within the context of the installation's mission. The INRMP is intended for use by all installation personnel. The Sikes Act is the legal driver for the INRMP.

1.1 Purpose and Scope

This Integrated Natural Resource Management Plan (INRMP) is a "road map" for natural resources management on Minot Air Force Base (AFB) and its associated properties. It is based on an interdisciplinary approach to ecosystem management. Essentially, ecosystem management is an approach to natural resources management that focuses on the interrelationship of processes linking soils, plants, animals, climate, water, and topography. Minot AFB's (also referred to hereafter as the installation or Base) military mission is a prime consideration in developing the INRMP. Accordingly, the interrelation of military resources (airplanes, runways, support facilities, etc.) and personnel requirements with the natural resources is considered as an integral process of the ecosystem.

This INRMP describes the military mission, physical environment, biotic environment, management issues and concerns, and management goals and objectives which address the issues and concerns. The management goals and objectives chapter describes the focus of the five-year plan that will be used to manage the natural resources on Minot AFB consistent with the military mission.

The INRMP is a dynamic document that integrates all aspects of the Minot AFB mission and natural resources management within each specific land use category. For example, rigorous control of noxious weeds may be implemented at locations where grazing activities occur and near the runway to discourage wildlife use in these areas. Wildlife habitat enhancement only occurs in areas at least one mile from the runway for aircraft safety considerations; and aesthetic value, erosion control, windbreaks, soil type, neighboring vegetation, proximity to wetlands, and potential impacts of newly created bird habitats on flying operations are all considered when developing the installation's tree planting plan.

1.2 Management Philosophy

The INRMP serves as a key component of the Installation Development Plan, which provides background and rationale for the policies and programming decisions related to land use, resource conservation, facilities and infrastructure development, and operations and maintenance to ensure that they meet current requirements and provide for future growth. The INRMP supports the mission by identifying the natural resources present on the installation, developing management goals for these resources, and integrating these management objectives into the military requirements for mission operations/support and regulatory compliance to minimize natural resource constraints.

This INRMP outlines the steps needed to fulfill compliance requirements related to natural resources management and fosters environmental stewardship. It is organized into the following principal sections:

- An overview of the current status and potential future conditions of the natural resources
- Identification of potential impacts to or from natural resources
- The key natural resource management areas addressed
- Management recommendations that incorporate the installation's goals and objectives for natural resource management areas
- Specific work plans for effective implementation of the INRMP

Management issues and concerns, as well as goals and objectives, are developed from analysis of all the gathered information, and are reviewed by Base personnel involved with or responsible for various aspects of natural resources management. The INRMP was developed using an interdisciplinary approach and is based on existing information of the physical and biotic environments, mission activities, and environmental management practices at Minot. Information was obtained from a variety of documents, interviews with installation personnel, on-site observations, and communications with both internal and external stakeholders. Coordination and correspondence with these agencies is documented and satisfies a portion of the requirements of 32 Code of Federal Regulations (CFR) 989, *Environmental Impact Analysis Process (EIAP)*. Goals and objectives require monitoring on a continuous basis and management strategies are updated whenever there are changes in mission requirements, adverse effects to or from natural resources, or changes in regulations governing management of natural resources.

1.3 Authority

The Sikes Act, 16 United States Code (USC) § 670a, requires an INRMP be written and implemented for all DoD installations with significant natural resources. This plan has been developed cooperatively between the installation, the USFWS, and North Dakota Game and Fish Department (NDGF). The USAF natural resources program ensures continued access to land, air, and water resources to conduct realistic military training and testing, as well as to sustain the long-term ecological integrity of the resource base.

This INRMP is developed under, and proposes actions IAW, applicable DoD and USAF policies, directives, and instructions. AFMAN 32-7003 provides the necessary direction and instructions for preparing an INRMP. Issues are addressed in this plan using guidance provided under legislation, Executive Orders (EOs), Directives, and Instructions including DoDI 4715.03; Air Force Policy Directive (AFPD) 32-70, *Environmental Considerations in Air Force Programs and Activities*; and AFMAN 32-7003. DoDI 4715.03 provides direction for DoD installations to establish procedures for an integrated program for multiple-use management of natural resources. AFPD 32-70 discusses general environmental quality issues, including proper cleanup of polluted sites, compliance with applicable regulations, conservation of natural resources, and pollution prevention. AFMAN 32-7003 provides guidance on the preservation of cultural resources at USAF installations. The 'Annotated Summary of Key Legislation Related to Design and Implementation of the INRMP' Table, included as an appendix to this plan, summarizes key legislation and guidance used to create and implement this INRMP. Refer to the complete listing of AFIs, the Federal Register, and the USC to ensure that all applicable guidance documents, laws, and regulations are reviewed. Installation-specific policies, including state and local laws and regulations are summarized in the table below.

Installation-Specific Policies (including State and/or Local Laws and Regulations)	
State of North Dakota Laws and Regulations	
Golden Eagle and Bald Eagle Protection, implemented through North Dakota Cent.Code § 20.1-04-05	Prohibits take, killing, hunting, possessing, selling, purchasing, pursuing, shooting, disturbing, capturing, or destroying any golden eagle, bald eagle, or any nest or egg thereof, within the state of North Dakota.
North Dakota Noxious Weed Law North Dakota NDCC § 4.1-47-02	The responsibility for control of noxious weeds is placed on many state and local governing bodies and certain private entities under the guidance and approval of the North Dakota Department of Agriculture.
North Dakota Century Code Chapter 55-11	It is therefore the public policy of the state of North Dakota that natural areas be acquired and preserved by the state and that other agencies, organizations, and individuals, both public and private, be encouraged to set aside such areas for the common benefit of the people of present and future generations. To make surveys and maintain registers and records of nature preserves and other natural areas within the state.
North Dakota Century Code Chapter 20.1	Protection of birds, game, fish, turtles, frogs, fur-bearers, aquatic nuisance species control, etc.

1.4 Integration with Other Plans

The INRMP serves as the primary management plan for natural resources on Minot AFB, but it is not a comprehensive account of detailed information regarding all management-related topics. Instead it works in collaboration with other more detailed management plans. Several management plans were used in the development of this INRMP including but not limited to: the Pest Management Plan, the Installation Development Plan, and the Wildlife Hazard Assessment and Wildlife Hazard Management Plan. As additional management plans are developed, they will be incorporated in to the management actions outlined in the INRMP.

The Pest Management Plan (PMP) provides a wide-ranging assessment of pest problems on Base and outlines current control measures that are being used to address the situation. Protection of human health and morale as well as protection of property and resources from damage are the main priorities of the PMP. Additionally, a goal of the plan is to manage pests in a manner that protects the environment by minimizing the amount of chemicals and other pollutants used. It is the role of the natural resource manager, through projects developed in the INRMP, to coordinate with the pest management program to ensure that regulations regarding chemical use and pest removal are being followed.

The Installation Development Plan (IDP) is a comprehensive plan for development on Base for the next 20-30 years. The plan outlines future short-range, medium-range, and long-range development plans, operation and environmental planning constraints, and what measures are being taken to ensure future development meets sustainability goals set forth by the USAF and DoD. The goals, objectives, and projects in the INRMP take into account the changes detailed in the IDP and support the future development plans.

The Wildlife Hazard Assessment and associated Wildlife Hazard Management Plan looks at bird/wildlife aircraft strike hazards (BASH) and develops strategies for minimizing bird/wildlife and aircraft interactions. This is primarily accomplished through hazing and habitat modifications.

Coordination with the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service's wildlife biologist on the potential impact natural resource management projects discussed in the INRMP will have on the BASH program's goals is crucial prior to project implementation. Both documents, the Wildlife Hazard Management Plan and the INRMP, must complement each other while sharing a common goal of prioritizing mission safety.

The Minot Grounds Maintenance Contract is a document used to guide and control the contracted services for vegetation management on Minot. This document should follow guidance and restrictions identified in the INRMP concerning disturbance of grassland birds, seeding mixes, tree species selection, wetlands management, and pest management.

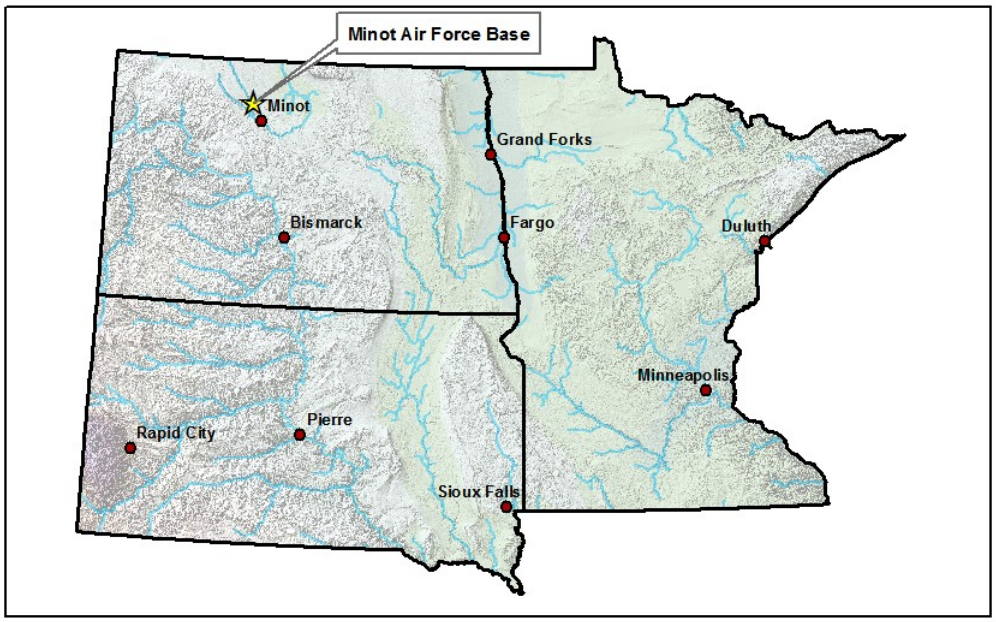
2.0 INSTALLATION PROFILE

Office of Primary Responsibility (OPR)	5 CES/CEIEC has overall responsibility for implementing the natural resources management program and is the lead organization for monitoring compliance with applicable federal, state, and local regulations.
Natural Resources Manager/Point of Contact (POC)	Thomas Filkins 445 Peacekeeper Place Minot AFB, ND 58705-5006 701-723-4870 701-723-6380
State and/or local regulatory POCs (Include agency name for Sikes Act cooperating agencies)	USFWS: Mr. Kevin Shelley NDGFD: Mr. Terry Steinwand
Total acreage managed by installation	5,090
Total acreage of wetlands	144.4
Total acreage of forested land	0
Does installation have any Biological Opinions? (If yes, list title and date, and identify where they are maintained)	No
Natural Resources Program Applicability (Place a checkmark next to each program that must be implemented at the installation. Document applicability and current management practices in Section 7.0)	☒ Fish and Wildlife Management ☒ Outdoor Recreation and Access to Natural Resources ☒ Conservation Law Enforcement ☒ Management of Threatened, Endangered, and Host Nation-Protected Species ☒ Water Resource Protection ☒ Wetland Protection ☒ Grounds Maintenance ☐ Forest Management ☒ Wildland Fire Management ☒ Agricultural Outleasing ☒ Integrated Pest Management Program ☒ Bird/Wildlife Aircraft Strike Hazard (BASH) ☐ Coastal Zone and Marine Resources Management ☒ Cultural Resources Protection ☒ Public Outreach ☒ Geographic Information Systems (GIS)

2.1 Installation Overview

2.1.1 Location and Area

Minot Air Force Base occupies about 5,090 acres in north-central North Dakota, 15 miles north of Minot, North Dakota and about 40 miles south of the U.S./Canada border (Figure: Location of Minot AFB). The land surrounding Minot AFB is gently rolling open agricultural land with a few farm dwellings.



Location of Minot AFB

Installation/GSU Location and Area Descriptions

Installation/ Geographically Separated Unit (GSU)	Main Use/ Mission	Acreage	Addressed in INRMP?	Describe Natural Resource Implications
Minot AFB (Main Base)	Major US Air Force Base – fixed wing and helicopter aircraft	5,090	Yes	reference INRMP
GSU 1- MAFs	Missile Alert Facilities (Launch Control)	6-8 varies	Yes	none – secured/fenced uniformly landscaped area
GSU 2 - LFs	Missile Launch Facilities	<1	Yes	none – secured/fenced concrete and gravel surface

2.1.2 Installation History

Minot AFB occupies land that was originally part of the mixed grass prairie ecosystem of the northern Great Plains. The land was essentially pristine until about 1905 when European settlers put the land to agricultural use. Between 1905 and 1955, the land was used for farming and ranching. Consequently, nearly all the land had been plowed or disturbed for agricultural purposes by the time the Air Force acquired the land in May 1955 (Strom and Hoffbeck 1995).

Construction of Minot AFB began in the fall of 1955. The first military personnel arrived in January 1956 to organize and prepare the base for its defense mission. Minot AFB was officially activated in February 1957 as an Air Defense Command Base. In 1958, temporarily-assigned aircraft operated at Minot AFB. The first permanent aircraft, KC135 Stratotankers assigned to the 4136th Strategic Wing, arrived at Minot AFB in September 1958. Full-scale base security operations began at the same time and remain in effect today.

In the early 1960s, Minot AFB's mission continued to expand. The 32nd Fighter Group, consisting of F-106 Delta Dart fighter interceptors, was activated in January 1960. The F106's were assigned to the 5th Fighter Interceptor Squadron. An interesting thing about the Fifth, was their mascots, two live lynx kittens that produced several offspring which were kept on base. In the mid 80's the 5th Fighter Interceptor Squadron converted from the F-106 to the F-15 Eagles. The F-15s only flew over Minot until the spring of 1988, when the 5 FIS was deactivated. After the unit inactivated, their mascots, two of the lynx kittens were donated to the Roosevelt Park Zoo in Minot.

In July 1961, the first B-52 bombers arrived at Minot AFB. Further expansion of the mission began with the construction of the Intercontinental Ballistic Missile complex in January 1962. Minot AFB then came under the command of the Strategic Air Command in June 1962 and remained so until 1992. The U.S. Air Force then restructured its forces and the Strategic Air Command was combined with the Tactical Air Command to form the Air Combat Command (ACC) with Headquarters at Langley AFB, Virginia. In 2009 Minot AFB became part of Air Force Global Strike Command (AFGSC) headquartered at Barksdale AFB, LA.

2.1.3 Military Missions

Minot Air Force Base is home to two major Air Force units: the 5th Bomb Wing and the 91st Missile Wing. The 5th Bomb Wing and 91st Missile Wing are Air Force Global Strike Command units. The 5th Bomb Wing is the host wing.

5th Bomb Wing Mission: Known by its nickname, the Warbirds, the 5th Bomb Wing and its fleet of B-52H Stratofortress bombers serve as part of the Air Force's conventional and strategic combat force as AEF warriors. The men and women of the wing are capable of flying anywhere around the world and delivering a wide range of precision-guided bombs and munitions. Excellence is the daily standard and is echoed by its motto, "Guardians of the Upper Realm."

91st Missile Wing Mission: As one of the Air Force's three operational intercontinental ballistic missile units, the 91st Missile Wing, whose members are known as the Rough Riders, are responsible for strategic deterrence by operating, maintaining and securing a fleet of 150 Minuteman III missiles located in underground launch facilities positioned in a 8,500 square mile missile complex located in the northwest part of the state.

Listing of Tenants and Natural Resources Responsibility

Tenant Organization	Natural Resources Responsibility
91st Missile Wing	*5th Bomb Wing*

2.1.4 Natural Resources Needed to Support the Military Mission

Wildlife interactions with aircraft, security measures, and humans have potential to impact flight, security, and health missions on Minot AFB. Adequate inventory of resident and migratory birds aide in flight mission planning to reduce BASH. Control of nuisance wildlife, primarily digging and burrowing mammals reduce breaches under security fences. Removal of large, free-roaming mammals reduce the threat of aircraft and automobile damage from collisions. Vegetation management to include invasive brush reduction, weed control, and plant vigor all reduce bird attraction to aircraft movement areas and prevent false indicators on security sensors.

2.1.5 Surrounding Communities

Approximately 15 miles south of Minot AFB is Minot, the closest town to have a population exceed 2,000 people. With a population of 40,888, Minot is the fourth largest town in North Dakota according to the 2010 Census. The population is split almost evenly between males and females, with 50.7% (20,723) female and 49.3% (20,165) male. The racial makeup of the area is primarily Caucasian (90.2%), with Native American (3.2%) and African American (2.3%) making up a majority of the rest (US Census Bureau 2010). The median household income is $49,018 (US Census Bureau 2012).

The area surrounding Minot AFB is rural, consisting primarily of agricultural lands. In Ward County, the market value of crop sales in 2017 was $205,986,000 (2017 USDA Census of Agriculture); this value is down nearly 20% from 2012. Spring wheat, durum, soybeans, forage, and corn are the main crops (2017 USDA Census of Agriculture).

According to the Minot AFB public website the Base population is 12,195 including active duty, family members, and DoD civilian employees.

Minot AFB provides great economic benefit to the surrounding communities. It has indirectly created 1,985 jobs with an estimated value of $94,239,860 (Economic Impact Analysis September 2018). Additionally, the combined payroll for military and civilian employees on base is $361,432,662 (Economic Impact Analysis September 2018). When the value of indirect jobs is combined with the annual payroll and annual expenditures, the total economic impact of Minot AFB is $543,137,639 (Economic Impact Analysis September 2018).

2.1.6 Local and Regional Natural Areas

Minot AFB is located within the Souris River drainage system. The Souris and the Des Lacs rivers are the only perennial streams in Ward County; however, neither river flows closer than within six miles of Minot AFB. Drainage from Minot AFB flows into Egg Creek just north of thebase.

Intermittent streams in the vicinity of Minot AFB include Little Deep Creek, Livingston Creek, and an unnamed tributary to Livingston Creek that runs through the western edge of Minot AFB.

The Upper Souris National Wildlife Refuge is located approximately seven miles west of the northwest end of the Minot AFB runway. This refuge along the Souris River is mainly used by migratory waterfowl.

2.2 Physical Environment

2.2.1 Climate

The climate of the central region of North Dakota is marked by large temperature variations, light to moderate precipitation, and considerable wind. As shown in the Table Minot AFB Climate, mean monthly maximum temperatures range from 81 °F in July to 20 °F in January. Mean monthly low temperatures range

from 58 °F in July to 3 °F in February. High temperatures occasionally exceed 100 °F in July and August and minimum temperatures can fall below -20 °F from November through March.

In 2018, Minot AFB received 15.3 inches of precipitation and 29.4 inches of snow during the preceding 12 months (National Weather Service 2019). About 70 percent of the annual precipitation occurs from May through September. Large snowdrifts are common with high winds accompanying snow during the winter.

Minot AFB Climate

	Temperature (˚F)			Precipitation (inches)				Snowfall (inches)	
Month	Mean High	Mean Low		Monthly Mean	Monthly Maximum	24-Hour Maximum		Monthly Mean	Monthly Maximum
JAN	20.4	2.9		0.57	1.60	0.66		6.9	21.4
FEB	20.8	2.7		0.59	1.79	1.04		6.9	18.8
MAR	34.8	15.5		0.89	2.31	1.13		6.9	19.4
APR	51.6	29.4		1.25	3.07	1.17		3.8	13.4
MAY	64.4	42.9		2.95	8.65	2.63		2.8	15.7
JUN	73.4	53.1		4.11	11.12	3.02		0	0
JUL	80.5	58.0		2.18	5.82	1.73		0	0
AUG	79.5	54.4		2.09	4.42	2.01		0	0
SEP	70.1	46.2		1.65	3.95	2.20		0	0
OCT	53.9	33.0		1.19	2.68	1.50		3.5	14.5
NOV	37.4	19.0		0.74	2.12	1.50		6.0	14.3
DEC	22.3	6.3		0.91	2.65	1.52		10.6	30.3
Annual	50.8	29.4		20.19	32.35	3.02		49.6	74.3

Source: National Weather Service 2019, NOWData from Minot Experimental Station 2000-2019)

Overall, climate projections suggest that the number of heavy precipitation events (events with greater than 1 inch per day of rainfall) is projected to increase (USGCRP, 2018).

2.2.2 Landforms

The topography of Minot AFB is relatively flat. Elevations range from about 1,590 feet at the northeast comer of the ~~B~~ase near Egg Creek to about 1,680 feet at the northwest corner of the base. Thus, the maximum elevation change across the entire installation is approximately 90 feet.

Average slopes are less than 1 percent across the base with the land sloping very gently to the northeast throughout most of the base. Slopes range from flat to approximately ten percent adjacent to the few drainage ways that traverse the site. The relatively flat topography is pitted with small, shallow, poorly drained depressions where wetlands tend to form. These depressions are found mostly in the northwest portion of the base between the runway and the sewage lagoons.

2.2.3 Geology and Soils

Bedrock beneath the base consists of nearly-horizontal layers of silt, sand, clay, sandstone, and lignite of the Bullion Creek Formation (Paleocene Epoch) (Bluemle, 1988). The bedrock is overlain by up to 150 feet of glacial till consisting of unsorted clay, silt, sand, cobbles, and boulders deposited during the Pleistocene Epoch (“Ice Age”).

Soils on the base belong to the Barnes-Svea Association. They are well drained and moderately well drained, nearly level, black loamy soils which have formed in the glacial till. More than half the base is

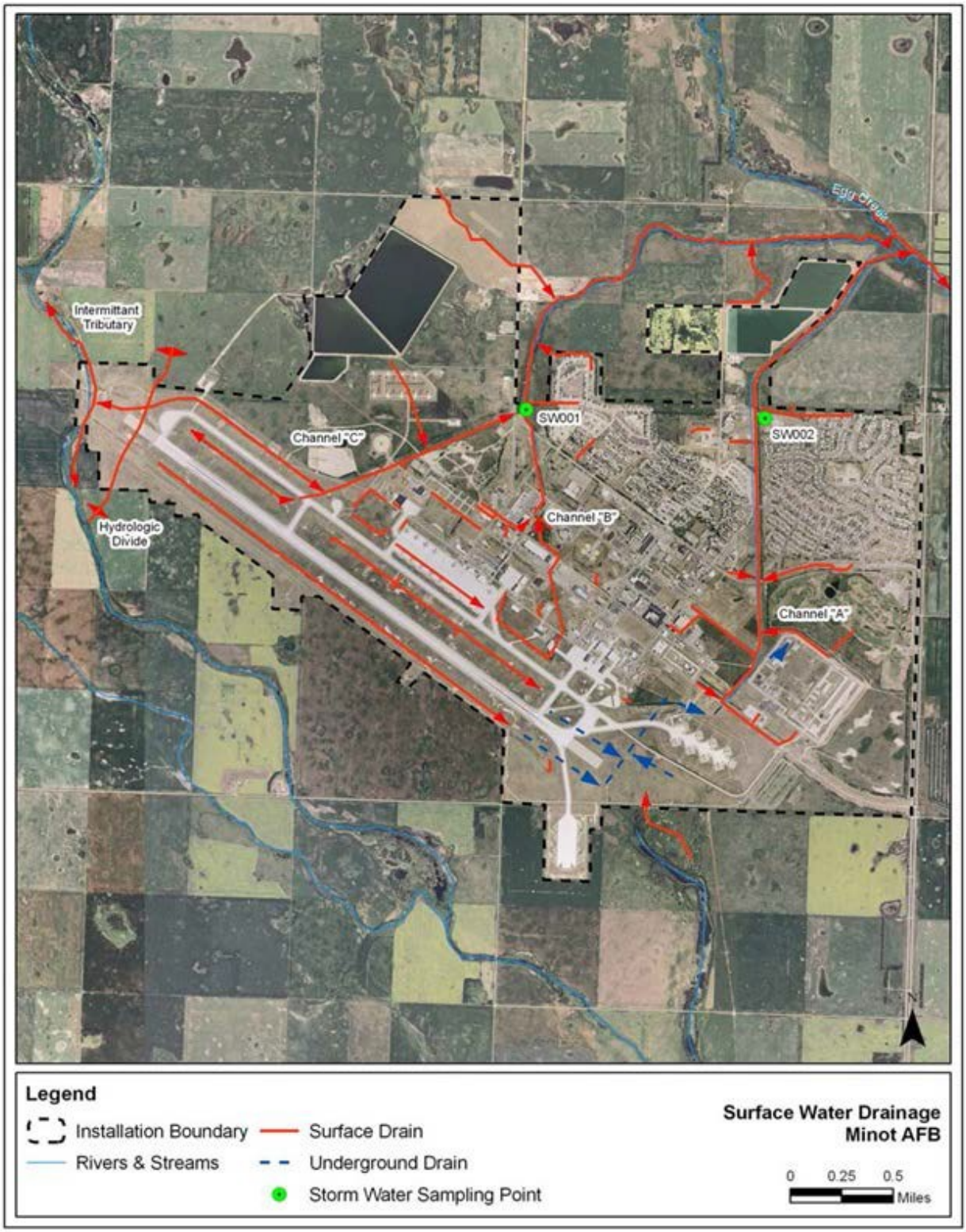
covered by Barnes-Svea loams (Howey et al., 1974). The average topsoil depth on Minot AFB is approximately eight inches. The entire site has been mapped by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service).

2.2.4 Hydrology

Minot AFB is located within the Souris River basin. Most of the base drains to the north and northeast to Egg Creek. Both Livingston and Egg creeks are intermittent tributaries of the Souris River. There are no perennial streams on Minot AFB.

Six sewage lagoons which make up the base's wastewater treatment system are located on the base. Three are located in the northeast portion of Minot AFB north of the family housing area. The other three are in the northwest portion of the base adjoining a former sanitary landfill and open space. The combined size of these lagoons is 312 acres. Several small ponds and wetlands are also located on the ~~B~~ase, mostly in the northwest portion of the installation between the runway and the sewage lagoons.

Surface runoff from the base is not impounded. It is not used for any purpose other than natural contribution to surface water flows within the Souris River basin and groundwater recharge. Stormwater runoff from open spaces, landscaped areas, runways, hardstands, streets, yards, and developed areas (surface water drainage) is managed at Minot AFB by a network of catch basins, swales, gutters, ditches, inlets, culverts, underground drains, and channels. Egg Creek receives sheet flow and concentrated surface flow from three main drainage channels designated Channels A, B, and C (Figure: Surface Water and Drainage at Minot AFB). Channels A, B, and C drain the eastern, central, and western portions of the base, respectively. Egg Creek flows eastward to Cut Bank Creek, which in turn flows north to the Souris River. In addition to the three primary channels, surface water also discharges from the base through three smaller areas. Stormwater from the watershed of the closed former sanitary landfill discharges along the north-central boundary of the base into a tributary of Egg Creek. A small watershed on the southeast side of the base drains to the north under the runway through culverts to Channel A, and another small watershed on the west side of the base drains into a pond and eventually into nearby Livingston Creek.



Surface Water Drainage at Minot AFB

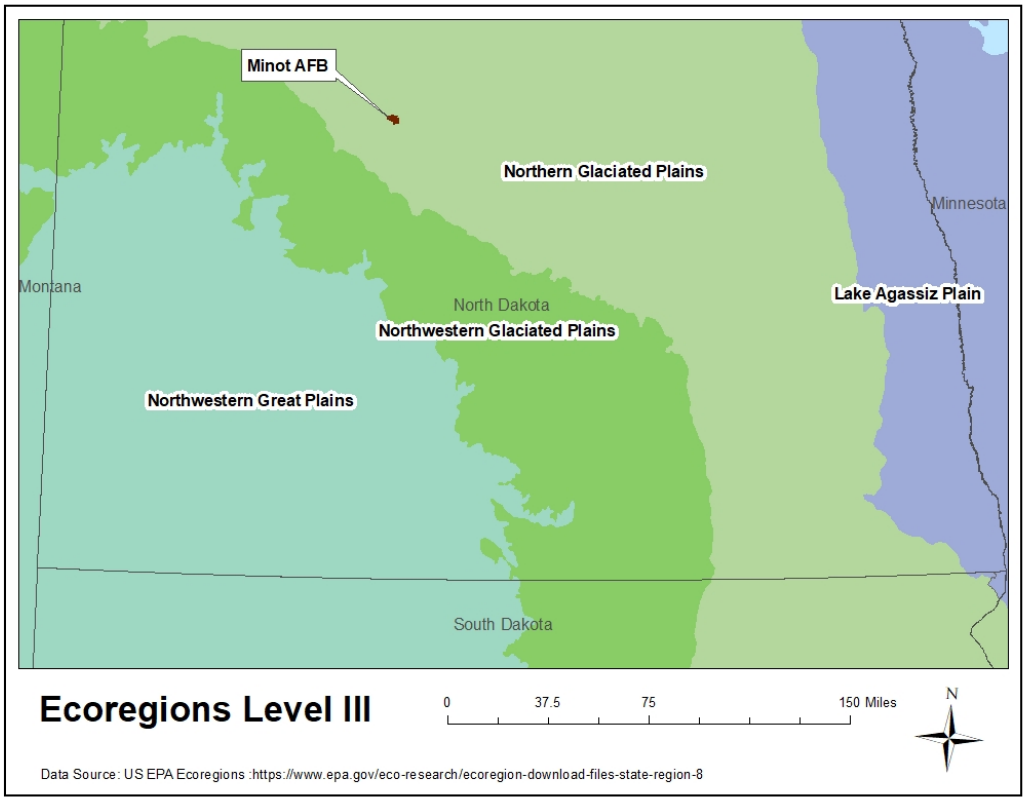
2.3 Ecosystems and the Biotic Environment

2.3.1 Ecosystem Classification

Landscapes have been historically categorized and classified utilizing a variety of criteria including environmental conditions, climate, geology and landforms, soil, species and the evolutionary history of the planet, dependent on the intended purpose. Regional land classifications describe the hierarchical framework for ecological unit design and provide a systematic methodology to classify landforms for national, regional and landscape level planning purposes. Bailey's Ecoregions was developed by a geographer with the U.S. Forest Service and is still widely used.

These classifications are scalable and can be useful to management decisions for agencies toward their understanding of how these properties fit within a larger geographical landscape and help with the understanding of the biological and ecological issues.

Minot AFB proper and its associated properties are situated within the Dry Domain of Bailey's Ecoregion Classification which includes the central United States. The ~~B~~ase is situated within the Northeastern Glaciated Plains Section, and much of the associated properties of Minot AFB are scattered across the region within the Northeastern Glaciated Plains. This area is typified by an annual evaporation rate greater than the water gains from precipitation. The Province level for the ~~B~~ase and its associated properties were typified by the rolling plains dominated by several species of grasses and herbs. This has created a situation suitable for the agricultural activities that currently exist. The landscape for the eastern portion of this province was influenced by the glaciation that occurred around 12,000 to 14,000 years ago. The region is also typified by extremes in seasonal weather due to the influences of the rain shadow created by the Rocky Mountains to the west and jet streams.



2.3.2 Vegetation

The Minot AFB area was historically a mixed-grass prairie. Agriculture and developed land use have created unnatural disturbances, introduced non-native species, and suppressed natural vegetation. Future vegetation management must consider potential mission interference and hazard management. Changing climate in the Northern Great Plains region is expected to create increased weed and invasive plant competition.

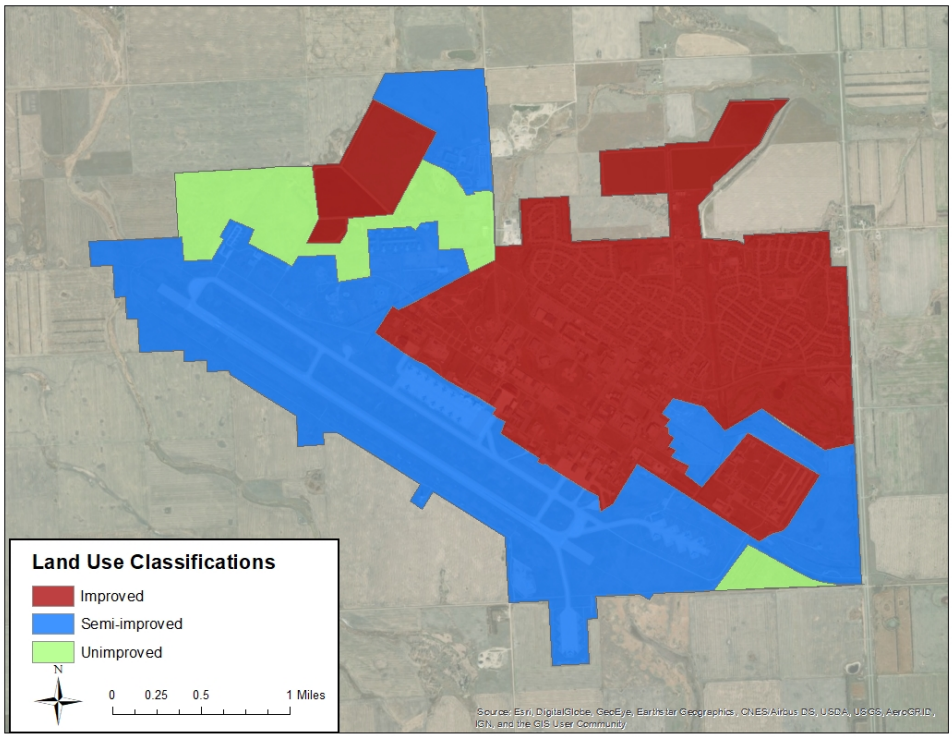
2.3.2.1 Historic Vegetation Cover

Minot AFB lies within the Northern Great Plains. The Northern Great Plains were largely developed and shaped by glaciation during the late Pleistocene Epoch. Glacial ice remained until 10 to 12 thousand years ago. The vegetation that became established following the retreat of the glaciers consisted of northern mixed prairie with tall-grass, mid-grass, and short-grass plant species.

This area remained largely pristine until 1905, when it was put to agricultural use by the first European settlers. Between 1905 and 1955, the land now known as Minot AFB was used for farming and ranching. Nearly all the land was plowed or otherwise disturbed for agricultural purposes before becoming part of Minot AFB.

2.3.2.2 Current Vegetation Cover

Vegetation management on Minot AFB can be broken down into three main classifications as defined by AFMAN 32-7003; improved, semi-improved, and unimproved. Improved ground are those areas in which vegetation is regularly mowed during the growing season. Semi-improved land are areas where periodic mowing of vegetation occurs, primarily for operational reason. Lastly, lands in which vegetation is allowed to grow unimpeded by maintenance activities are classified as unimproved grounds.



Much of the semi-improved and unimproved portions of Minot AFB consist of a mixture of non-native grasses dominated by smooth bromegrass (*Bromus inermis*), and Kentucky bluegrass (*Poa pratensis*). Non-native forb species including yellow sweetclover (*Melilotus officinalis*), white sweetclover (*Melilotus albus*), and alfalfa (Medicago sativa) are also common in these areas. Despite the predominately non-native species found in these areas, a number of native plants are also found on base such as common milkweed *(Asclepias syriaca),* purple coneflower *(Echinacea angusifolia),* and prairie rose *(Rose arkansana)* No known prairie remnants are located on MAFB.

Vegetation within the Aircraft Movement Area is managed, in accordance with AFI 91-212, in a way to minimize wildlife attractants to the area. Grass height is kept between 7 and 14 inches and species are selected to be unattractive to birds and other wildlife. A mix of grasses including western wheatgrass (*Pascopyrum smithii*), intermediate wheatgrass (*Thinopyrum intermedium*), and Durar hard fescue *(Festuca brevipila)* is used to reseed disturbed areas within the Aircraft Movement Area. Additionally, broad-leafed weeds are kept to a minimum.

A noxious weed survey was completed in 2018 in both the semi-improved and unimproved areas to document the distribution and abundance of noxious. During that survey, populations of absinth wormwood (*Artemisia absinthium*), Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensi*), field sow thistle (*Sonchus arvensis*), leafy spurge (*Euphorbia esula*), and yellow toadflax (*Linaria vulgaris*) were documented throughout many of these areas with Canada thistle being the most abundant.

Trees make up very little of the vegetation on MAFB however they do serve an important role. Shelterbelts consisting of carefully selected tree and shrub species have been planted strategically throughout Base, primarily to serve as wind blocks, noise abatement, and living snow fences. These rows of trees primarily consist of plains cottonwood (*Populus deltoids),* honey locust (*Gleditsia triachanthos),* blue spruce (*Picea pugens),* and Russian olive *(Elaeagnus angustifolia).* Russian olive trees are no longer planted on Base due to their highly invasive nature.

Wetlands on Base are dominated by three main species, common cattail (*Typha latifolia*), three square (*Scirpus pungens*), and common reed (*Phragmites australis).* Although not native and highly invasive, common reed is considered a facultative wetland species as it is usually found in wetlands although it can occasionally be found in other areas. Both common cattail and three square are classifies as obligate species as they occur almost always under natural wetland conditions. Other commonly occurring wetland obligate species observed on Base include swamp smartweed (*Polygonum coccineum),* spikerush (*Eleocharis macrostachya),* yellow sedge (*Carex flava),* and small water plantain (*Alisma subcordatum).*

2.3.2.3 Future Vegetation Cover

There are no anticipated mission changes at Minot AFB. Some minor development of areas should be expected as old infrastructure is replaced with new. In general, the management of improved, semi-improved, and unimproved vegetation will not change. An ongoing emphasis will be placed on volunteer tree and shrub removal in grassland areas. Shelterbelts will be managed to remove invasive shrubs; shelterbelts may entirely be removed if windbreaks are determined to be a greater BASH than their energy conservation value.

Regional climate models project warmer and generally wetter conditions with elevated atmospheric carbon dioxide concentrations are expected to increase the abundance and competitive ability of weeds and

invasive species (USGCRP, 2018). Disturbed areas and natural or unmanaged areas will likely transition to weedy communities rather than grasslands.

Vegetation management should strive for sustaining grasslands to provide low diversity wildlife habitat on the base. As weed competition increases global change impacts, management actions should be prioritized by mission impact. A model such as the BASH Wildlife Exclusion Zones should be used to prioritize weed treatment for the flight mission. Other metrics may be used to prioritize seed treatment for security concerns. Species composition is not as relevant as functional grassland habitat; uniform stands or a combination of native grasses, introduced grasses, and invasive grasses at heights that reduce BASH is the most desirable vegetation community for Minot AFB.

Cultural options for weed treatment such as prescribed fire should be integrated into the pest management strategy for Minot AFB. Chemical treatment as a primary means of control may be more limited in the future with the discovery of public and environmental health concerns and genetic resistance in weed species.

2.3.2.4 Turf and Landscaped Areas

Urban areas occupy about 1,766 acres of land at Minot AFB (Figure: Vegetation Communities and Wildlife Habitat). Most of this land has been developed for base facilities, housing, and recreation areas. Plantings of sod-forming Kentucky bluegrass (*Po pratensis*) and rough fescue (*Fescula scabrella*) cover most yards and recreation areas. A variety of turf grasses, ground covers, shrub species, deciduous trees, and evergreen trees comprise the balance of the urban vegetation at Minot AFB. These species are mostly planted in open space areas and manicured portions of other land uses, including community, housing, industrial, recreational, and medical areas. Appendix Tables (Turf Grasses Found on Minot AFB, Ground Covers Found on Minot AFB, Shrub Species Found on Minot AFB, Evergreen Tree Species Found on Minot AFB, Deciduous Tree Species Found on Minot AFB) identify the turf and landscaping species used on Minot AFB.

Disturbed areas occupy 88.4 acres on Minot AFB (Figure: Vegetation Communities and Wildlife Habitat). Disturbed areas include highly trafficked areas such as the firefighter training area in the northwest portion of the Base, a closed sanitary landfill, which is currently in long-term management, bordering the sewage lagoons on the northern fence line, an equestrian center south of the former sanitary landfill, a community garden area southeast of the equestrian center, and gravel roads. Annual weed species present in these areas include kochia (*Kochia scoparia*) and Russian thistle (*Salsola kall*). Perennial weeds include field bindweed (*Convolvulus arvensis*), smooth brome (*Bromus inermis*), common sunflower (*Helianthus annum*), white sweetclover (*Melilotus alba*), and yellow sweetclover (*Melilotus officinalis*).

A large number of ornamental trees occur on Minot AFB. These plantings mostly occur in the form of linear shelter belts that vary from single to multiple rows. The most common species of ornamental/landscaping trees on the Base are plains cottonwood (*Populus deltoides*), honey locust (*Gleditsia triacanthos*), Chinese elm (*Ulmus pumila*), caragana (*Caragana aborescens*) and blue spruce (*Picea pugens*). These shelterbelts cover 66.2 acres of the Base (Figure: Vegetation Communities and Wildlife Habitat).

2.3.3 Fish and Wildlife

Minot AFB provides habitat for a variety of wildlife including bird game, furbearers, small mammals, birds, reptiles, amphibians, moths and butterflies. There is no fish habitat on Minot AFB. Within these categories five federally-listed threatened, endangered, or candidate species may occur on or close to Minot AFB, as outlined in the Threatened and Endangered Species and Species of Concern section below. Additionally,

19 species that have been documented on Base have been identified as state species of conservation priority. Although there are no legal requirements regarding conserving these species or their habitat, the state has recognized that species are in decline and/or are suffering from loss of habitat. A complete list of all species that have been documented on Base is provided in Appendix B.

Big Game

Three species of big game have been documented on Minot AFB. Both species of deer have been found in the shelterbelts on Base, although in very low numbers. Moose have been observed in the shelterbelts on the eastern portion of Base as well as within the airfield. The individuals that have ended up on Base were able to cross the security fence over large snow drifts and by entering the southern entrance gate adjacent to the highway. In an effort to prevent potential BASH issues, the installation is managed for exclusion of deer and moose; therefore, any that are found on Base are promptly removed.

Big Game Species Observed on Minot AFB	
Moose	*Alces alces*
Mule Deer	*Odocoileus hemionus*
White-tailed deer	*Odocoileus virginianus*

Minot AFB is located in the North Dakota Game and Fish Department (NDGFD) moose hunting unit M10 and deer unit 3A2, although no hunting occurs on base. The highest population of moose in North Dakota is in unit M10, with the highest density being in the Williston area. Mule deer populations in western North Dakota were down in 2018 compared with the previous year, however the population is still 14% higher than the long-term average. White-tailed deer populations have remained stable or have slightly increased over the last decade however they are still below the management goals. In 2018, both antler and antlerless white-tailed deer harvest success was at 64%, slightly higher than the previous year (NDGFD, 2019).

Furbearers

Ten species of furbearers have been documented on Minot AFB through a combination of surveys conducted by natural resource staff and USDA-Wildlife Services BASH biologists. None of these species are state species of conservation priority, however the fisher (*Pekania pennant)* is very uncommon in North Dakota. Most furbearers are found in low numbers, primarily in unimproved and semi-improved areas including the open space near the archery range, the fields surrounding the munitions storage areas, and the wastewater treatment facilities. Areas within and surrounding the airfield, as identified in the BASH plan, are managed for exclusion of these species as they pose a BASH risk.

Small Mammals

Thirteen species of small mammals have been documented on Minot AFB through a combination of surveys conducted by natural resource staff, University of Montana's Center for Integrated Research on the Environment staff, and USDA-Wildlife Services BASH biologists. Of these species, three are listed as a state species of conservation priority including Richardson's ground squirrel, big brown bat, and little brown bat. Despite being identified as a state species of conservation priority, Richardson's ground squirrels are so numerous throughout Base that depredation occurs to keep the population under control. It is listed as a species of conservation priority due to the limited information on population trends statewide and the important role that the species played for other species of concern. Most small mammals are found throughout base, especially the squirrel species. Shrews and voles have primarily been found in grassland

habitats, including the areas surrounding the munition storage areas, the weapons storage area, and the airfield.

Species of Conservation Priority	
Richardson's Ground Squirrel	*Urocitellus richardsonii*
Big Brown Bat	*Eptesicus fuscus*
Little Brown Bat	*Myotis lucifugus*

Birds

113 species of birds have been documented on Minot AFB through a combination of surveys conducted by natural resource management staff and USDA-Wildlife Services BASH biologists. Fifteen of these species are listed as state species of conservation priority. The majority of bird species observed on Base utilize the waste water treatment lagoon habitat for feeding or loafing, including waterfowl, gulls, swallows, and shorebirds. Many of the warbler species utilize the shelterbelts that are found throughout the property. Generalist species, including American robins, red-tailed hawks, and American crows, are commonly found in a variety of habitat types throughout Base.

Species of Conservation Priority	
Black Tern	American White Pelican
Northern Pintail	American Bittern
Lesser Scaup	Northern Harrier
Western Meadowlark	Swainson's Hawk
Willet	Grasshopper Sparrow
Upland Sandpiper	Bobolink
Marbled Godwit	Wilson's Phalarope
Franklin's Gull	

Reptile and Amphibians

Four species of reptiles and amphibians have been documented on Minot AFB, none of which are species of conservation priority. Other reptile and amphibian species are likely to occur on Base as these were incidental observations that occurred during other surveys. Two species of conservation priority, the smooth greensnake (*Opheodrys vernalis)* and the Canadian toad (*Anaxyrus hemiophrys*), have the potential to occur on base. Most reptile and amphibian species that occur on Base are found in and around aquatic habitats including wetlands, drainage ditches with standing water, and the waste water treatment lagoons.

Moths and Butterflies

Twenty four species of butterflies and 165 species of moths have been documented on Minot AFB in a variety of habitat types. Of these species, only the monarch butterfly (*Danaus plexippus*) has been identified as a state species of conservation priority. Additionally, the bina flower moth (*Schinia bina*) documented on Base was the first time that species has documented in North Dakota.

Species of Conservation Priority	
Monarch	*Danaus plexippus*

2.3.4 Threatened and Endangered Species and Species of Concern

The Endangered Species Act (ESA), passed in 1973, provides protection for species that have been identified as being in serious decline. According to the USFWS, there are five federally- listed threatened, endangered, and candidate wildlife species that may occur or historically occurred within Ward County, North Dakota (USFWS, 2019). Appendix Tables, Threatened, Endangered, or Candidate Species Documented near Minot AFB, summarizes the federal and state listing status of each of these species.

Threatened or Endangered species with the potential to occur on Base include the piping plover (*Charadrius melodus*), whooping crane (*Grus americana*), rufa red knot (Calidris canutus rufa), northern long-eared bat (*Myotis septentrionalis*), and Dakota skipper (*Hesperia dacotae).* Currently, there are no proposed or candidate species in Ward county.

According to the U.S. Fish and Wildlife Service (USFWS), there are no federally-listed threatened, endangered, or candidate plant species that may occur or historically occurred within Ward County, North Dakota. The Natural Heritage Division of North Dakota's Parks and Recreation Department maintains the official list of State-recognized threatened and endangered plant species. In 2011, their records indicated that three species are known or expected to occur in Ward County: chamomile grapefern (*Botrychium matricariifolium*), sedge mousetail (*Myosurus aristatus*), and Columbia watermeal (*Wolffia columbiana*). Only Columbia watermeal would be likely to occur on the Base; it is a floating aquatic plant that typically occurs in non-flowing pools (Dirk, 2009).

North Dakota does not have a state endangered or threatened species list. Only those species listed by the Endangered Species Act of 1973 are considered threatened or endangered in North Dakota.

The 2015 North Dakota State Wildlife Action Plan (SWAP) is the principle document for safeguarding rare and declining fish and wildlife species in North Dakota. The number of species of conservation priority increased from 100 under the old plan to 115 in the current SWAP. While twenty new species were added to the list, five species were removed.

Minot AFB has not conducted an inventory specific to the SWAP list, but uses the SWAP as a guide for ecosystems management.

2.3.5 Wetlands and Floodplains

A total of 77 wetlands encompassing 170.5 acres of acres have been identified on Minot AFB, most of which are classified as hydrologically isolated "pothole" wetlands with the remaining being drainage ditches. The majority of these wetlands occur on the northern portion of the base (Figure: Wetland Communities at Minot AFB). A 2016 rapid assessment was completed on one third of these wetlands to assess health and functionality using the North Dakota Rapid Assessment Method. This survey indicated that 58% of wetlands surveyed on Base are in good condition, 29% were categorized as fair high, 8% as fair low, and 4% as poor. The amount of noxious weeds, lack of diversity of wetland-specific vegetation, and habitat alteration in and around the wetland buffer were the main reasons wetlands on Base were found to be in less than optimal conditions.

Twenty-three different species of wetland plants were documented on Minot AFB during a 2010 wetland delineation, forming eight dominant wetland vegetation communities. The cattail, soft-stem bulrush, common reed community type occurs along the fringes of the six waste water treatment lagoons. The cattail, three-square, common reed community type occurs in Channel B, a large storm water channel that flows north draining

into Egg Creek off-site and a drainage ditch that flows into this channel. The swamp smartweed, spikerush, yellow sedge community type occurs in a number of wetlands in the southeastern portion of the Base. The cottonwood, green ash, sandbar willow community type is found in wetlands north of the elementary school. They are partially forested and continue off-site. The spike rush, cattail, swamp smartweed, foxtail barley, three-square community type occurs in the drainage ditches in the vicinity of the flight line, which is mowed regularly. The swamp smartweed, curly dock, small water plantain, American sloughgrass community type occurs in poorly drained pothole wetlands near the flight line. The American sloughgrass, prairie cordgrass, Kentucky bluegrass, duckreed community type is dominant in one wetland located at the southeast end of the flight line area. This area is highly disturbed as it is mowed regularly. The cattail, soft-stem bulrush, softrush, duckweed community type occurs in Channel A, a large stormwater channel that flows north draining into Egg Creek off-site. Vegetation species recorded during the 2010 survey are listed in Appendix Tables, Vegetation Species Recorded During Wetland Survey at Minot AFB (ERM, 2011).

Wetland Communities at Minot AFB

2.3.6 Other Natural Resource Information

N/A

2.4 Mission and Natural Resources

2.4.1 Natural Resource Constraints to Mission and Mission Planning

2.4.1.1 Stormwater Management

Minot AFB is required to implement a stormwater management plan to control surface water runoff. Surface runoff from the Base is not impounded. It is not used for any purpose other than natural contribution to surface water flows within the Souris River basin and groundwater recharge. Stormwater runoff from open spaces, landscaped areas, runways, hardstands, streets, yards, and developed areas (surface water drainage) is managed by a network of catch basins, swales, wetlands, gutters, ditches, inlets, culverts, underground drains, and channels. Vegetation management is required to capture sediment and contaminants while still permitting stormwater flow.

2.4.1.2 Migratory birds

Minot AFB is located within two major North American migratory bird flyways, Central Flyway and Mississippi Flyway. Regardless of how vegetation is managed, the base will finds periods of high use by migratory birds by either flyover of stop over use.

2.4.1.3 Open Space

To ensure mission sustainability, developable open space is critical for successful future operations while minimizing negative impacts to mission and mission support systems. Natural Resources Management of open spaces and reclaimed areas is active in land improvement programs which facilitate mission support by provided access to realistic training areas.

2.4.1.4 Wetlands and Open Water

Various migratory bird species create strike hazards affecting flight missions. Waterfowl species, in particular, are attracted to the sewage lagoons as well as nearby wetlands for loafing and nesting purposes. Although major bird strikes do occur on Minot AFB, they are addressed through the aggressive 5 BW BASH Avoidance Plan. The plan establishes procedures for reporting and minimizing bird strike hazards. Future natural and environmental management should be focused on avoiding modifications to areas that potentially increase BASH hazards.

2.4.2 Land Use

The Figure Existing Land Use at Minot AFB illustrates the current land uses on Minot AFB. Multiple resource management plans and procedures must be implemented on lands within each use category to achieve the primary management goals associated with each category.

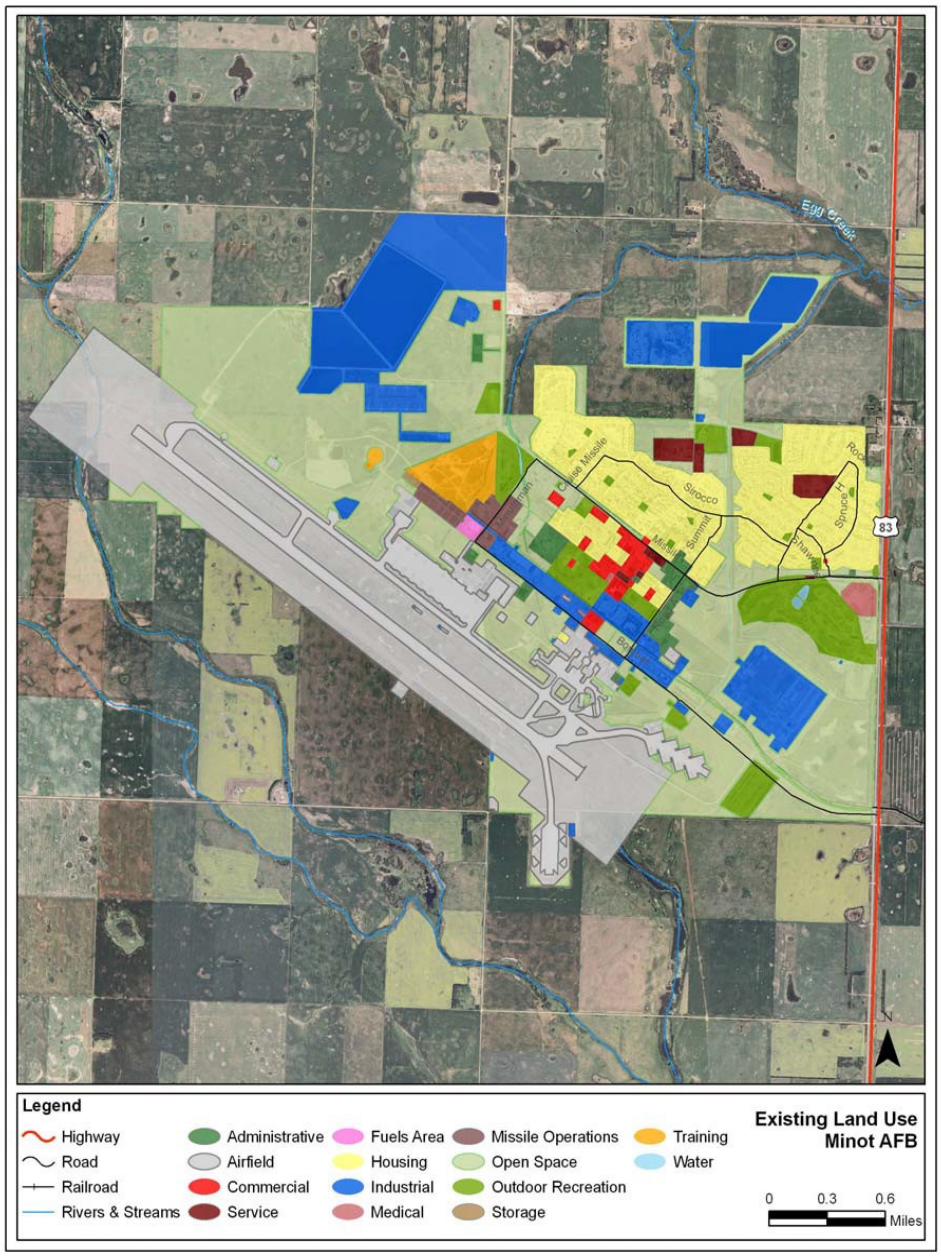
Future Changes in Land Use at Minot AFB

Land Use	Existing (Acres)	Future (Acres)	Change (Acres)	% Change
Administrative	62.0	62.0	0.0	0.0%
Airfield[1]	1,416.0	1,699.0	283.0	20.0%
Community (Commercial)	49.0	112.0	63.0	128.6%
Community (Service)	49.0	49.0	0.0	0.0%
Housing (Accompanied)	563.0	651.0	88.0	15.6%
Housing (Unaccompanied)	69.0	80.0	11.0	15.9%
Industrial	823.0	1,421.0	598.0	72.7%
Medical and Dental	17.0	23.0	6.0	3.5%
Missile Operations	43.0	108.0	65.0	151.2%
Open Space	1,731.0	621.0	-1,110	-64.1%
Outdoor Recreation	259.0	241.0	-18.0	-6.9%
Water	9.0	23.0	14.0	155.6%
TOTAL	**5,090.0**	**5,090.0**	**0**	**0**

[1] Includes Runway, Taxiway, Apron, Clearance Zone, and Operations and Maintenance

[2] Minot AFB's GIS database does not include detailed future total land areas for these specific uses, but the total area currently occupied by these uses together represent less than 2% of the total future area of the Base.

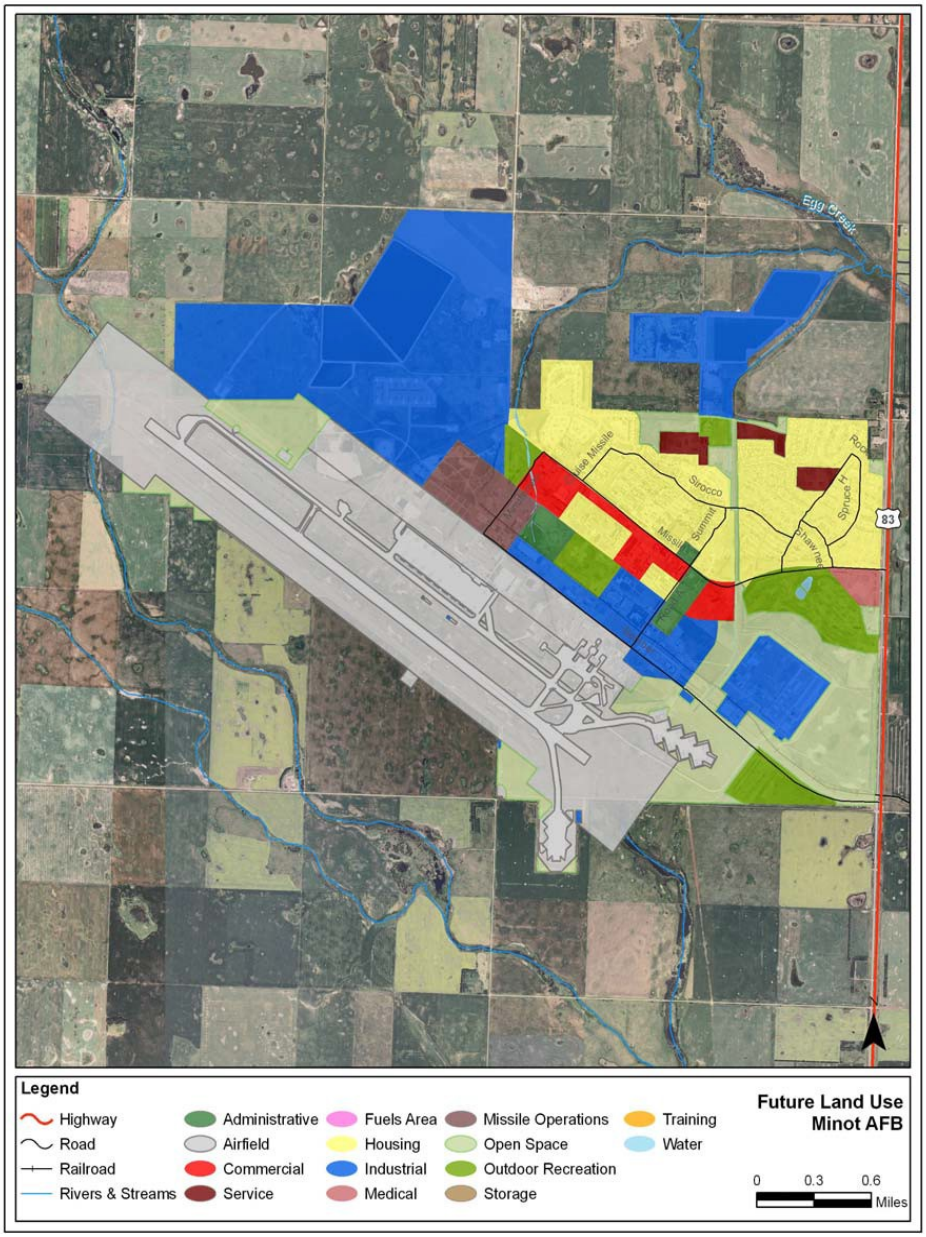
When fully implemented, the recommendations of the Base's IDP will further alter the landscape and ecosystems at Minot AFB. Figure: Future Land Use at Minot AFB illustrates planned future Base conditions according to the IDP. The IDP calls for increases in nearly all of the most intensely developed land uses at the Base. The largest increases will be in industrial land which will nearly double from 16% to 28% of the total Base area and in the airfield which will increase from 28% to 33% of the total Base area. This increase in developed acreage will cause significant reductions in open space, which will be reduced from 34% to 12% of the total Base area (Minot AFB, 2018). The plan also calls for the demolition of 21 buildings on base.



Existing Land Use at Minot AFB

External forces are also affecting and will continue to affect land use on the Base. Due to the recent oil boom in North Dakota, the city of Minot is experiencing a housing shortage which is affecting Minot Air Force Base personnel's ability to locate affordable housing. In response to the housing shortage, Minot AFB plans to build more dorms to house personnel. According to Minot AFB's GIS database, the expansion of on-base housing will consume almost 100 additional acres of the Base. Family housing was privatized in 2011, so these projects/facilities will be completed and managed by private contractors. When these projects are complete, the residential areas and the other intensely developed land uses such as airfield, commercial, industrial, and missile operations will account for 4,045 acres or nearly 80% of the total acreage on the Base. The Table Future Changes in Land Use at Minot AFB quantifies the planned changes

in land use at the base as depicted in the Existing Land Use at Minot AFB and Future Land Use at Minot AFB figures.



Future Land Use at Minot AFB

2.4.3 Current Major Mission Impacts on Natural Resources

Various forms of pest management provide the greatest mission impacts on Natural Resources. Management of native or natural grassland habitat to promote various wildlife are limited due to BASH, security, and controlling pathogens.

Vegetation diversity and height is managed to reduce wildlife habitat within aircraft movement areas per the BASH plan. Enhancement of vegetation and wildlife habitat must limit the type of wildlife expected to use all areas within the base boundary as defined by BASH wildlife exclusion zones.

Rodents and small mammals will persist even with reduced cover and forage. Pesticides may be used in accordance with the Minot Integrated Pest Management Plan (IPMP) where rodents are an attraction to predators or causing other human hazards.

Early successional flowering plants can provide habitat for many pollinating insects, including listed species such as the Dakota skipper and proposed species such as the monarch butterfly. Early successional plants colonize bare areas surrounding the security fences. Movement of plants in the wind have been known to set off motion sensors causing false security breach alarms. Security fences must remain free of vegetation to avoid false sensing and permit unobstructed views of security infrastructure.

Mosquitoes on Minot AFB provide a significant health hazard to airmen from blood pathogens. To ensure readiness, the base aerially applies insecticides to reduce mosquito populations. These treatments likely impact other non-target insects to include pollinators. The aerial application serves as a training mission for other service units; treatment of mosquitoes on Minot AFB has a dual fold benefit to sustaining military readiness.

2.4.4 Potential Future Mission Impacts on Natural Resources

Future land use changes were proposed in 2018 as part of the Minot AFB Installation Development Plan (IDP). The IDP takes into account land use compatibility, facility consolidation, mission sustainability, quality of life, and safety and security issues. Impacts to natural resources are centered on a substantial reduction in open space to accommodate industrial and residential expansion. Open space will be reduced from 34% to 12% of total base acreage (Figure 6-2). This will likely produce a loss in habitat and/or associated wildlife species.

3.0 ENVIRONMENTAL MANAGEMENT SYSTEM

The USAF environmental program adheres to the Environmental Management System (EMS) framework and its Plan, Do, Check, Act cycle for ensuring mission success. Executive Order (EO) 13693, *Planning for Federal Sustainability in the Next Decade*; DoDI 4715.17, *Environmental Management Systems*; AFI 32-7001, *Environmental Management*; and International Organization for Standardization (ISO) 14001 standard, *Environmental Management Systems – Requirements with guidance for use*, provide guidance on how environmental programs should be established, implemented, and maintained to operate under the EMS framework.

The natural resources program employs EMS-based processes to achieve compliance with all legal obligations and current policy drivers, effectively manage associated risks, and instill a culture of continual improvement. The INRMP serves as an administrative operational control that defines compliance-related activities and processes.

4.0 GENERAL ROLES AND RESPONSIBILITIES

General roles and responsibilities that are necessary to implement and support the natural resources program are listed in the table below. Specific natural resources management-related roles and responsibilities are described in appropriate sections of this plan.

Office/Organization/Job Title (Listing is not in order of hierarchical responsibility)	**Installation Role/Responsibility Description**
Installation Commander	Approve the INRMP by signature on all revised INRMPs. Certify the annual review of the INRMP as valid and current; the certification of the annual INRMP review authority is delegated to the Civil Engineer Squadron Commander. Provide appropriate staffing to ensure implementation of the INRMP. Control access to and use of installation natural resources. Ensure that a notice of intent (NOI) is prepared, per 32 C.F.R. Part 989.17, and a public scoping process initiated per 32 C.F.R. Part 989.18 for the EIAP on actions that may affect wetlands. Consider, in coordination with the Environmental Planning Function (EPF), the impact of proposed actions on federally listed threatened and endangered species by including the species in the scoping of the NEPA analysis at the earliest possible time.
AFCEC Natural Resources Media Manager/SME/Subject Matter Specialist (SMS)	Direct assistance is provided by AFCEC/CZOM Offutt Section. Coordinates with installation natural resources managers (NRM)/points of contact (NR POC) to: identify changes to each respective base's program; changes to execution strategy (to include accomplishing in-house) and/or execution agent; confirm funding amounts, distribution date, and mission/situational changes that may initiate the emergent requirement process; as well as serve as liaison with the AFWFC (AFCEC/CZOF) on all matters pertaining to coordination of support activities of the AFWFC with installation POCs. If the 5 CES/CEIEC NRM is vacant, the AFCEC NRMM may complete the annual INRMP review and coordination for the installation.
Installation Natural Resources Manager/POC	The NRM, 5 CES/CEIEC is responsible for completing the annual INRMP review and coordination, maintaining a compliant INRMP, tracking permits and reports, and micropurchase procurement related to natural resources. Obtains copies and makes available fish and wildlife depredation permits. Participates as a member of the Bird Hazard Working Group.
Installation Security Forces	Cooperatively supports conservation law enforcement program with NDGF. Primary enforcement is through access control and encroachment enforcement.
Installation Unit Environmental Coordinators (UECs); see AFI 32-7001 for role description	Serve as the EMS conduit between the installation environmental function and their unit. Attend Cross-Functional Team (CFT) and other working group meetings as requested. Advise the work area supervisor on any EMS and environmental policies.
Installation Wildland Fire Program Manager	The 5 CES/CEFO manages the wildland fire program to include developing and reviewing the Installation Wildland Fire

Office/Organization/Job Title (Listing is not in order of hierarchical responsibility)	**Installation Role/Responsibility Description**
	Management Plan and initial attack on wildland fires. Assistance is provided by the AFCEC CZOF Ellsworth Wildland Fire Support Module.
Pest Manager	Pest Management Coordinator should regularly coordinate with the Natural Resources NRM concerning insect, rodent, bird, and predator pest concerns in Semi-improved and Unimproved areas to evaluate and recommend integrated solutions to benefit natural resources and control pests.
Range Operating Agency	N/A
Conservation Law Enforcement Officer (CLEO)	Enforcement of state fish and wildlife laws will be a cooperative effort between the NDGF and the 5th Security Forces Squadron (SFS). A formal cooperative agreement is not currently in place but if a situation presents itself, the Air Force is committed to working in cooperation with the USFWS or NDGF conservation officers.
National Environmental Policy Act (NEPA)/Environmental Impact Analysis Process (EIAP) Manager	Civil Engineer Installation Management
NOAA)/ National Marine Fisheries Service (NMFS)	N/A
US Forest Service	Available to assist AFCEC/CZOM with executing cooperative agreements for INRMP implementation
USFWS	The US Fish and Wildlife Service (USFWS), Missouri River Fish and Wildlife Conservation Office provide project level assistance for management, inventory, and natural resource planning on the installation. This relationship is formalized through an agency-wide, intra-agency assistance agreement for conservation of natural resources on Air Force controlled lands. The staff assistance provided aides Minot AFB with maintaining Sikes Act compliance to ensure sufficient professionally trained natural resources management personnel are available to prepare and implement the INRMP. The North Dakota Ecological Services Office is the delegated INRMP review and approval office.
USDA-APHIS-WS Biologist	Provides a wildlife biologist on base who, in collaboration with the airfield safety department, plays a key role in the development and implementation of a Bird Aircraft Strike Hazard program. Regularly coordinate with the Natural Resources NRM concerning insect, rodent, bird, and predator pest concerns in Semi-improved and Unimproved areas to evaluate and recommend integrated solutions to benefit natural resources and control pests.
North Dakota Game and Fish Department (NDGFD)	Provide assistance to Minot AFB when requested and information to the NRM regarding newly listed threatened, endangered, candidate, or state species of concern

Office/Organization/Job Title (Listing is not in order of hierarchical responsibility)	**Installation Role/Responsibility Description**
Natural Resources Conservation Service (NRCS)	Provide assistance to Minot AFB when requested for inspection and recommendations for Riding Club pasture management and weed control.
Wing Staff – Vice Commander	Chairman, Environmental Safety Occupational Health Council
Wing Staff – Judge Advocate	Regulatory Interpretation, Off-Base Dispute/Complaint Resolution, Legal Representation
Wing Staff – Operations Support – Airfield Management	Airfield grounds maintenance, BASH monitoring and minimization, and manages USDA-WS agreement. Obtains and maintains compliance with state and federal fish and wildlife depredation permits required to maintain safe flight operations. Provides copies of all permits to 5 CES NRM and AFCEC NRMM.
Medical Group – Medical Operations Squadron – Bioenvironmental	Zoonosis monitoring and mosquito and tick surveillance
Support Group – Civil Engineering – Deputy Base Engineer	The 5th Civil Engineer (CE) Squadron is a member of the 5th Mission Support Squadron and is responsible for ensuring that the installation's natural resources are managed in a manner that balances the conservation of resources with maintaining base mission and safety. Delegated signature authority for annual INRMP reviews.
Support Group – Civil Engineering – Program	Base Comprehensive Plan (BCP), Base General Plan, and Landscaping Specifications for New Construction
Support Group – Civil Engineering – Operations	General Grounds Maintenance and Pest Management
Support Group – Services – Outdoor Recreation	Outdoor Recreation Equipment Rental
Support Group – Services – Golf Course	Golf Course Grounds Maintenance, Golf Course Pest Control, and Golf Course Environmental Management Plan

5.0 TRAINING

USAF installation NRMs/POCs and other natural resources support personnel require specific education, training, and work experience to adequately perform their jobs. Section 107 of the Sikes Act requires that professionally trained personnel perform the tasks necessary to update and carry out certain actions required within this INRMP. Specific training and certification may be necessary to maintain a level of competence in relevant areas as installation needs change, or to fulfill a permitting requirement.

Installation Supplement – Training

The 5 CES NRM must take the course DoD Natural Resources Compliance, endorsed by the DoD Interservice Environmental Education Review Board and offered for all DoD Components by the Naval Civil Engineer Corps Officers School (CECOS).

There are no additional installation-specific natural resources training requirements.

6.0 RECORDKEEPING AND REPORTING

6.1 Recordkeeping

The installation maintains required records IAW Air Force Manual 33-363, *Management of Records*, and disposes of records IAW the Air Force Records Management System (AFRIMS) records disposition schedule (RDS). Numerous types of records must be maintained to support implementation of the natural resources program. Specific records are identified in applicable sections of this plan, in the Natural Resources Playbook, and in referenced documents.

Installation Supplement – Recordkeeping

There are no additional installation-specific natural resources recordkeeping requirements.

6.2 Reporting

The installation NRM is responsible for responding to natural resources-related data calls and reporting requirements. The NRM and supporting AFCEC Natural Resources Media Manager and SMS should refer to the Environmental Reporting Playbook for guidance on execution of data gathering, quality control/quality assurance, and report development.

Installation Supplement – Reporting

There are no additional installation-specific natural resources reporting requirements.

7.0 NATURAL RESOURCES PROGRAM MANAGEMENT

This section describes the current status of the installation's natural resources management program and program areas of interest. Current management practices, including common day-to-day management practices and ongoing special initiatives, are described for each applicable program area used to manage existing resources. Program elements in this outline that do not exist on the installation are identified as not applicable and include a justification, as necessary.

Installation Supplement – Natural Resources Program Management

Natural Resources management at Minot AFB primarily involves pest management to reduce BASH, security concerns, and human health hazards. Other inventory and vegetation management occurs to improve modelling and reduce habitat for BASH.

7.1 Fish and Wildlife Management

Applicability Statement

This section applies to all USAF installations that maintain an INRMP. The installation is required to implement this element.

Program Overview/Current Management Practices

This section of the Integrated Natural Resource Management Plan addresses management of fish and wildlife in consideration of Minot Air Force Base's mission. As directed in Air Force Manual 32-7003, Minot AFB is a Category I installation as it has suitable habitat for managing and conserving fish and wildlife species. Management actions will involve the enhancement of habitat, where applicable, in an effort to increase the diversity of species located on base. At the same time, the installation's mission must be prioritized, and management actions to reduce wildlife and aircraft interactions must be taken accordingly.

Management activities on base will reduce the amount of birds and other wildlife utilizing the habitat near the airfield and protect and conserve threatened, endangered and other species of concern while maintaining the installation mission and remaining in compliance with regulations.

Enforcement of fish and wildlife laws on Minot AFB is primarily concerning management laws like the Sikes Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Endangered Species Act, and state laws identified in Section 1.3 of this plan. This enforcement occurs through a self-reporting process conducted by annual INRMP reviews and permit required annual reports. Enforcement of illegal take and poaching by military and civilians on Minot AFB would be reported to the NDGF Conservation Law Officers. Depending on the situation, 5 SFS, 5 JA, USFWS, and NDGF will determine jurisdiction and mutually enforce violations to protect and deter unlawful wildlife take.

Minot AFB currently manages the installation for exclusion of any sort of large mammals; thus, there is currently no hunting or trapping allowed on the Base due to the security issues of the nuclear mission. The base is also devoid of any water bodies, including lakes or streams large enough to support any type of fishery.

Several species of wildlife have been identified as being nuisance species on Minot AFB including white-tail deer, moose, Richardson's ground squirrels, badgers, and mice. In order to minimize the potential for wildlife and aircraft interactions, any large game that enters the installation is removed. White-tail deer are the most common threat on base, but the potential for moose does exist. According to the Wildlife Hazard Management Plan, hazardous wildlife will be controlled in ways appropriate for the circumstance as identified in this plan. Medium-and- large sized mammals are primarily controlled using lethal methods including use of rimfire weapons, snares and trapping. Control and eradication of nuisance species is overseen and conducted by USDA APHIS Wildlife Services.

Smaller mammal species do occur on the installation and can become a nuisance. Digging behavior by species such as Richardson's ground squirrels and badgers pose a threat to turf, trees, and buried cables. Similarly, mice and tree squirrels often cause destruction of property on Base. Additionally, mice can be a vector for human health hazards such as Hantavirus. When smaller mammals need to be removed, they are general trapped by either Wildlife Services or the Pest Management office.

The Minot AFB Veterinary office has had no reported cases of Lyme disease, rabies, and equine encephalitis in domesticated animals as of November 2019. Although numerous vector species inhabit the installation, there have been no reported cases of rabies in any of the species inhabiting the Base. All pets on Base are required to be vaccinated, tagged for Rabies, and micro-chipped for identification purposes to reunite them quickly with their owner. Feral dogs and cats found on base are captured by Base Security Forces, contracted USDA, or pest management personnel and taken to the Souris Valley Animal Shelter. All horses on base are required to be vaccinated twice a year for Eastern Equine Encephalitis (EEE), Western Equine Encephalitis (WEE), Equine Influenza, Rabies, West Nile, Tetanus, Rhinopneumonitis, in addition to annual Coggins testing.

According to the 2018 Installation Development Plan, approximately 1,110 acres of open space found on the installation will be developed in the near future as base missions expand. This reduction of open space will limit what habitats are available for use by wildlife. Existing habitats in the form of sewage lagoons, shelter belts, wetlands, and grasslands are and will continue to remain primary habitats on the installation even after the new development.

Sewage Lagoons as Habitat

Six sewage lagoons are located on Minot AFB. These areas of open water serve as incidental habitat for waterfowl and shorebirds. Currently, these areas pose a conflict to the BASH program's mission of reducing the number of birds utilizing the installation. Waterfowl flying between the sewage lagoon and areas of habitat located on private land adjacent to the base, primarily Moose Lake, can be detrimental to aircraft missions.

Species such as rufa red knots have been observed in sewage lagoons around the city of Minot. These birds are regularly observed in migration on the Missouri River in ND, and have the potential to use the sewage lagoons on the base during migration. Diversity and distribution surveys need to be conducted on the installation to determine the species and population abundance of birds utilizing the sewage lagoons as habitat. Additionally, a management strategy needs to be developed to minimize the impact of the lagoons on bird abundance around the airfield.

Shelterbelts as Habitat

Shelterbelts located adjacent to the airfield need to be managed for exclusion of white-tail deer and other wildlife species that can be detrimental to aircraft missions. Management techniques should include eliminating all potential bedding and concealment cover by mowing row to row and in between tree-to-tree. Shelterbelts that are located away from the airfield should be managed to provide food, shelter, and nesting habitat for wildlife species on base, primarily migratory birds.

Wetlands as Habitat

Wetlands on Minot AFB were delineated in 2010 according to the protocol established in the USACE's Wetland Delineation Manual. The results of the survey indicated that there are 77 wetlands making up a total of 170.5 acres. Of these 77 wetlands, 71 are isolated pothole wetlands, four are drainage ditches within the airfield and two are larger ditches which flow north and drain in to Egg Creek (ERM 2011). Wetland habitat degradation on Minot AFB is due primarily to Base mowing regimes. BMPs should closely monitor ground disturbing activities to avoid soil erosion and protect surface waters from sedimentation. Maintaining vegetative buffers of at least 200 feet between activities and wetland resources is highly recommended. Additionally, BMPs to decrease invasive species invasion from previous disturbance events to a tolerable level should be implemented.

Grasslands as Habitat

Much of the grassland on Minot AFB has been heavily disturbed through development processes. Invasive species such as Canada thistle and leafy spurge have degraded potential habitat even further. A more recent concern has been identified with encroachment of invasive shrubs such as Russian olive. However, these areas still support a number of wildlife, primarily migratory birds and pollinator species. Management actions should include a mowing regime that excludes such bird species from utilizing areas near the airfield. A delayed mowing regime is recommended for areas not directly adjacent to airfield operations. This includes a mowing date no earlier than July 15th to allow nesting species sufficient time to fledge young. The control of noxious and invasive weeds should also be a primary management concern. Other areas of open grassland should be restored to a native prairie condition where acceptable. Mowing and herbicide activities can be significantly enhanced when combined with prescribed burning. Where there is a need to improve grass vigor, reduce woody encroachment, or expose a suppressed weed seedbank for treatment, prescribed burning should be considered.

Changing climate may impact wetlands year-to-year causing dryer and wetter cycles than historically observed. Adaptive vegetation management may be required to reduce BASH. Dry cycles may leave areas that commonly are saturated open and exposed; temporary seed mixes or weed treatment may be required

in these years. During wetter years, vegetation treatment may not be mechanically feasible; aerial treatment or prescribed fire may be required to reduce hazardous vegetation near the airfield.

Severity of wet and dry cycles with climate change will likely have an adverse impact on shelterbelts. These cycles increase stress and make trees more susceptible to disease. Research on climate adaptation should be done before recommending replants in shelterbelts. The installation should be prepared for large die-off events in shelterbelts; these events can increase BASH by increasing available bird forage on insects and perch sites for raptors.
With anticipated temperature increase and fluctuation of annual rain extremes, attaining restoration of native plant communities may not be attainable or efficient. Continuing management of grasslands to reduce woody encroachment and restoring management practices like prescribed fire will sustain an adaptive ecosystem regardless of change.

7.2 Outdoor Recreation and Public Access to Natural Resources

Applicability Statement

This section applies to all USAF installations that maintain an INRMP. The installation is required to implement this element.

Program Overview/Current Management Practices

The 5th CES and the 5th Force Support Squadron share responsibility for development and management of outdoor recreation facilities and activities at Minot AFB. In general terms, active, developed recreational facilities are operated and managed by Services. Passive and undeveloped recreational sites at the base are the responsibility of the CES. Major outdoor recreation facilities at Minot AFB include an archery range, picnic area, park and playground areas, a softball facility, swimming pool, community garden, tennis courts, and soccer fields, which are all managed by the CES. Services manages other major developed features, including the gymnasium and other outdoor recreational and rental facilitates. There is also a paintball facility on Minot AFB. Minot AFB is currently evaluating the potential to re-locate the paintball facility to a more suitable location on the installation.

A proposal to update the Bud Ebert Park/Playground has been submitted. This project would upgrade infrastructure and replace trees.

Access to the Base's recreational facilities is normally limited to military personnel, their families, and Department of Defense civilian employees; however the golf course is open to the public. Due to the security requirements of Minot AFB’s mission, civilians are not allowed access to most other recreational facilities unless accompanied by active or retired military personnel. Special permits may be issued to groups for various athletic contests.

7.3 Conservation Law Enforcement

Applicability Statement

This section applies to all USAF installations that maintain an INRMP. The installation is required to implement this element.

Program Overview/Current Management Practices

Due to the limited nature of the wildlife and other natural resources on the installation, there is currently no need for a separate conservation law enforcement program. Military law enforcement handles any situations

that occur on the base, involving illegal hunting or trapping of wildlife and other natural resource-related violations and will coordinate with NDGFD.

7.4 Management of Threatened and Endangered Species, Species of Concern, and Habitats

Applicability Statement

This section applies to USAF installations that have threatened and endangered species on USAF property. This section is applicable to this installation.

Program Overview/Current Management Practices

Although there have been no confirmed sightings of any federally-listed threatened, endangered, or candidate species on Minot AFB, there are several species that may occur on or close to the Base. The species listed below have been identified as threatened, endangered, or candidate species and have the potential to be found on base.

Threatened and Endangered Species

Under the ESA, species in decline are identified as falling into one of two categories, threatened or endangered. Species listed as endangered are those having the greatest risk of extinction throughout all or a significant portion of their range. Threatened species are those that are likely to become an endangered species in the foreseeable future throughout all or a significant portion of their range. Both threatened and endangered species require protection, and actions must be taken to ensure that they and/or their habitat is not negatively impacted.

Whooping Crane (Endangered)

The whooping crane (*Grus americana*) is making a slow but steady comeback. From a low of 15 birds in the 1940s, the current whooper population is believed to be about 264. Its decline is blamed on loss of habitat and excessive shooting. It was declared "endangered" in 1970. At a height of five feet, the whooping crane is the tallest bird in North America. Equally impressive is its 7-foot wingspan. Most whooping cranes migrate through North Dakota each spring and fall, frequently with sandhill cranes.

The migratory Aransas-Wood Buffalo Population (AWBP) is the only self-sustaining flock of whooping cranes remaining in the wild. These birds breed in the wetlands of Wood Buffalo National Park (WBNP) in Alberta and the Northwest Territories of northern Canada, and spend winters on the Texas coast at Aransas National Wildlife Refuge (ANWR), Austwell, Texas and surrounding areas.

Piping Plover (Threatened)

The piping plover (*Charadrius melodus*) is a small shorebird listed as "threatened" in 1985. Habitat loss and poor breeding success are major reasons for the population decline. North Dakota is the most important state in the Great Plains for nesting piping plovers. More than three-fourths of piping plovers in North Dakota nest on prairie alkali lakes, while the remainder use the Missouri River. Piping plovers inhabit barren sand and gravel shores of rivers and lakes. Critical habitat has been designated in Ward County for the piping plover; however, there is no designated critical habitat on Minot AFB.

Rufa Red Knot (Threatened)

The rufa red knot (*Calidris canutus rufa*) is a shorebird about the size of a robin. This species flies more than 9,300 miles from south to north every spring and repeats the trip in reverse every autumn, making this bird one of the longest-distance migrants in the animal kingdom. The rufa red knot winters at the tip of

South America in Tierra del Fuego, in northern Brazil, throughout the Caribbean, and along the U.S. coasts from Texas to North Carolina. The rufa red knot breeds in the tundra of the central Canadian Arctic from northern Hudson Bay to the southern Queen Elizabeth Islands.

The rufa red knot is an occasional migrant through North Dakota. Rufa red knots are regularly seen in migration on the Missouri River system in North Dakota. Geolocator data suggests that they also stop at alkaline (salty) lakes in southern Saskatchewan and North Dakota in both spring and fall migration. Habitat use is presumed to be similar to the piping plover. Rufa red knots have been observed in sewage lagoons around the city of Minot and in other communities throughout North Dakota. These birds are regularly observed in migration on the Missouri River in ND and have the potential to use the sewage lagoons on the base during migration.

Dakota Skipper (Threatened)

The Dakota skipper (*Hesperia dacotae*) is a small butterfly with a 1-inch wingspan. Dakota skippers are found in native prairie containing a high diversity of wildflowers and grasses. Habitat includes two prairie types: 1) low (wet) prairie dominated by bluestem grasses, wood lily, harebell, and smooth camas; and 2) upland (dry) prairie on ridges and hillsides dominated by bluestem grasses, needlegrass, pale purple coneflower and upright coneflowers and blanketflower.

Remnant native prairies occupied by Dakota skippers are subject to a variety of threats including clearing for development or agriculture and the presence of invasive weedy species. Although a majority of the open space on Minot AFB is groomed, potential habitat for the species exists throughout a small patch of remnant mixed grass prairie on the east side of base. However, surveys conducted in 2016 and 2017 did not find the presence of the species. On-going monitoring efforts will continue.

Northern Long-eared Bat (Threatened)

The northern long-eared bat (*Myotis septentrionalis*) is found in the United States from Maine to North Carolina on the Atlantic Coast, westward to eastern Oklahoma and north through the Dakotas, even reaching into eastern Montana and Wyoming. In Canada it is found from the Atlantic Coast westward to the southern Yukon Territory and eastern British Columbia. As its name suggests, this bat is distinguished by its long ears, particularly as compared to other bats in its genus Myotis. On October 2, 2013, the USFWS published in the Federal Register a proposal to list the northern long-eared bat as endangered throughout its range under the ESA.

Only limited surveys for the northern long-eared bat have occurred in North Dakota. Acoustic surveys were conducted on Base in 2016 by the University of Montana. Northern long-eared was identified through acoustic analysis software, but has not been manually confirmed. Additional survey efforts occurred during FY19 but results were not available to include in this plan.

Proposed Species

Proposed species are those species where a review of their status and need for conservation indicated that they do in fact need to be classified as endangered or threatened and the proposal for designation has been published in a Federal Register notice. This begins a year-long process of additional studies and public comments which results in a final determination of whether to list a species under the ESA. Currently, no species potentially occurring on or near Minot AFB are proposed for listing.

Candidate Species

Unlike proposed species, candidate species are plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Candidate species receive no statutory protection under the ESA, though Air Force policy is to provide similar protections whenever practical. No candidate species presently occur on or near Minot AFB.

7.5 Water Resource Protection

Applicability Statement

This section applies to USAF installations that have water resources. This section is applicable to this installation.

Program Overview/Current Management Practices

Minot AFB is located in the Souris River drainage basin. The Base does not discharge wastewater or stormwater that would adversely affect water quality. Therefore, the discharges do not conflict with the objectives of the international commission concerned with the quality of water in the Souris basin in both the U.S. and Canada.

There are two discharge points where storm water leaves the Base: stormwater outfalls SW001 and SW002. Outfall SW001 drains the western half of the base via “Channel B” which includes the main parking apron (MPA), main taxiway, aircraft maintenance facilities, missile wing operations and other non-industrial areas. Outfall SW002 drains the eastern half of the base via “Channel A” which includes the runway, the alternate parking apron (APA) and its taxiway, Weapons Storage Area (WSA), the aerospace ground equipment (AGE) maintenance area, petroleum-oils-lubricants (POL) bulk storage areas, general purpose/special purpose vehicle maintenance areas, the civil engineering compound, vehicle fueling stations (unleaded gasoline and diesel), the majority of base housing, and other non-industrial areas. These two outfalls are the primary stormwater conveyances off the Base. The watersheds draining to these two outfalls together account for approximately 97% of the Base total area.

Minot AFB has a Spill Prevention Control and Countermeasure (SPCC) Plan, a Facility Response Plan (FRP) and a Stormwater Pollution Prevention Plan (SWPPP) to protect the quality of this natural resource. Stormwater discharges are authorized by the North Dakota Department of Environmental Quality under the North Dakota Pollutant Discharge Elimination System General Permit Number NDR05-0000, which expires March 2020. Wastewater discharges are authorized by the North Dakota Department of Environmental Quality under the North Dakota Pollutant Discharge Elimination System Permit Number ND-0020486, which expires December 2019. The SWPPP prescribes several Best Management Practices (BMPs) and procedures intended to minimize potential impacts to surface water quality on the Base. The Base discharge permits require periodic monitoring of discharges.

Two stormwater quality monitoring sites have been established to fulfill this requirement: one is located on Channel B as it exits the Base at Outfall SW00l and the other is located on Channel A as it exits the Base at Outfall SW002. Additional water quality monitoring of the Base drainage system is conducted throughout the year to include monitoring of the water flowing onto the Base.

7.6 Wetland Protection

Applicability Statement

This section applies to USAF installations that have existing wetlands on USAF property. This section is applicable to this installation.

Program Overview/Current Management Practices

Minot AFB has multiple small (<1/4 acre) wetlands and areas with intermittent wetland-type features. Reference the Minot AFB Wetland Management Plan 2016 for specific wetland delineations and management practices.

A majority of wetlands on Minot AFB are low functioning. Based on the anticipated adverse impacts to BASH, wetlands enhancements are not planned for Minot AFB.

7.7 Grounds Maintenance

Applicability Statement

This section applies to USAF installations that perform ground maintenance activities that could impact natural resources. This section is applicable to this installation.

Program Overview/Current Management Practices

The 5th Civil Engineer Squadron (CES) is responsible for the overall maintenance of grounds on Minot AFB. This responsibility is accomplished through a joint effort between contractors and in-house Base personnel. The Base personnel maintain the restricted areas (the airfield and the Weapons Storage Area) and unimproved grass areas; the contractor maintains the rest of the base. Maintenance activities primarily focus on mowing, aerating, fertilizing, pruning, and clearing landscaped areas. In addition, the CES is responsible for removing snow from all major streets, sidewalks, and thoroughfares.

Few management issues or concerns exist with general maintenance of the Base's grounds. Very little irrigation occurs on Minot AFB. Because demands on the maintenance staff's time for these activities is minimal, the primary concerns are managing the annual mowing effort and handling waste generated by maintenance activities. Mowing of turf areas comprises the largest task in grounds maintenance. Depending upon the annual conditions (e.g., a wet year) and any potential long-term growth in manicured turf areas, mowing efforts may become overwhelming. If so, contracting all or part of the mowing annually may provide a means to effectively manage this extensive task.

7.8 Forest Management

Applicability Statement

This section applies to USAF installations that maintain forested land on USAF property. This section is not applicable to this installation.

Program Overview/Current Management Practices

N/A

7.9 Wildland Fire Management

Applicability Statement

This section applies to USAF installations with unimproved lands that present a wildfire hazard and/or installations that utilize prescribed burns as a land management tool. This section is applicable to this installation.

Program Overview/Current Management Practices

Minot AFB presently does not use fire as a management tool on the installation; a wildland fire management plan is currently contracted under development. If future management strategies change to include the use of prescribed burning, the Air Force Wildland Fire Center will be requested to develop a Wildland Fire Management Plan for Minot AFB. Some consideration of future burning has been discussed to reduce BASH. These prescribed burns would primarily be used to invigorate grass stands, remove thatch for herbicide treatment, and reduce woody species.

7.10 Agricultural Outleasing

Applicability Statement

This section applies to USAF installations that lease eligible USAF land for agricultural purposes. This section is applicable to this installation.

Program Overview/Current Management Practices

Agricultural out-lease properties to the equestrian riding club consist of two pastures and associated buildings totaling 57 acres. The lessee is required to rotate the use of pastures monthly and to have an annual inspection by the NRCS. Real Property is the keeper of the lease and is the primary party that oversees renewal of lease. In addition, the lessee has to comply with the requirements of Equine Herd Health Program which requires specific vaccination for all horses brought on Base. The NRM maintain copies of all transactions and ensure that the conditions of the contract for upkeep of pastures are being met. If the NRM determines that the lessee is in non- compliance, the Real Property Manager is then contacted to address the situation.

7.11 Integrated Pest Management Program

Applicability Statement

This section applies to USAF installations that perform pest management activities in support of natural resources management (e.g., invasive species, forest pests, etc.). This section is applicable to this installation.

Program Overview/Current Management Practices

A thorough Pest Management Plan, including policies, standards, and requirements of pest management, has been developed to address potential pest situations that might arise using chemical, physical, biological, cultural, and educational methods. The primary responsibility of implementing IPMP falls under the 5 CES pest management shop, although the program is interdisciplinary. Threats to base mission, damage to installation property and transmission of disease to humans and domestic animals are the main reasons a species is deemed a pest.

Noxious weed treatment and undesirable vegetation management in unimproved areas is primarily conducted by the USFWS as a component of grasslands management on Minot AFB. Improved, semi-improved, and GSU management is conducted by 5 CES personnel.

Habitat modification projects, such as nest walls away from the airfield, to reduce swallows near the airfield have been considered but determine infeasible. The USDA-WS and USFWS jointly evaluated the construction of nest walls near the sewage lagoons to keep swallows from nesting on hangars. Due to local winter weather conditions a structure to withstand the conditions was not successfully designed. In addition, USDA-WS literature review indicated structures would not be successful.

Additionally, other groups on base play key supporting roles in the overall pest management program. The Veterinary Clinic assists with pest control through parasite control and preventive vaccinations for animals. The grounds superintendent at the golf course is responsible for weed and plant disease control at that facility and assists pest management personnel in controlling insects and vertebrate pests. The grounds maintenance contractor is also a key player in non-chemical control of ornamental and turf pests. Structures and housing maintenance personnel also provide assistance in pest exclusion. Housing at Minot AFB has been privatized; thus most, if not all, pest control in housing will be the responsibility of the new housing contractor.

7.12 Bird/Wildlife Aircraft Strike Hazard (BASH)

Applicability Statement

This section applies to USAF installations that maintain a BASH program to prevent and reduce wildlife-related hazards to aircraft operations. This section is applicable to this installation.

Program Overview/Current Management Practices

Bird and wildlife strikes to aircraft pose a serious risk to health and safety of pilots and flight crews as well as cause severe damage to aircraft. According to the Minot AFB Wildlife Hazard Assessment, there have been 158 reported strikes in the past five years. The majority of these strikes were smaller birds with 17% of the strikes being swallows, 23% sparrows, and 6% songbirds. The remaining strikes include shorebirds (6%), raptors (2%), pigeons (1%), nighthawk (1%), gulls (2%), grassland birds (4%), doves (1%), blackbirds (2%), bats (1%), waterfowl (9%), upland species (1%), and unknown species (24%).

To help prevent wildlife and aircraft interactions, Minot AFB has entered into an interagency agreement with the US Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services (USDA-WS). This agreement employs a full-time Wildlife Services wildlife biologist at the base to aid the 5th Bomb Wing's Flight Safety Office. The role of the biologist is to conduct a wildlife hazard assessment, develop a management plan, and head the wildlife damage management program on base. The biologist is also responsible for maintaining all necessary permits associated with the BASH program. The NRM should coordinate with the biologist in determining the list of species and numbers proposed for depredation. Additionally, it is crucial for the NRM to work with the biologist to ensure that depredation is used only when other methods of control are unsuccessful.

Working with grounds maintenance, the land surrounding the airfield is managed in a manner to discourage wildlife from utilizing it, thus reducing the potential for airstrikes. This includes maintaining the grass in a uniform height and vegetation type, removing any potential nesting or roosting habitat such as woody debris, and disposing of any carcasses that would attract wildlife. It is the responsibility of the natural resource manager to coordinate the land management around the airfield with the wildlife biologist and the grounds maintenance staff.

In addition to birds, the base is managed in a manner to exclude large ungulates, including maintaining a fence to keep wildlife out. It is also crucial to work with airfield staff to ensure that gates are closed when not in use. Prevention of access to the base is the priority, but if a deer does enter the base it is quickly removed to prevent any problems.

7.13 Coastal Zone and Marine Resources Management

Applicability Statement

This section applies to USAF installations that are located along coasts and/or within coastal management zones. This section is not applicable to this installation.

Program Overview/Current Management Practices

N/A

7.14 Cultural Resources Protection

Applicability Statement

This section applies to USAF installations that have cultural resources that may be impacted by natural resource management activities. This section is applicable to this installation.

Program Overview/Current Management Practices

Minot AFB utilizes its Integrated Cultural Resources Management Plan (ICRMP) as the blueprint for management of the Installation's cultural resources. The Civil Engineer Squadron, Environmental Management Element has overall responsibility for Cultural Resources management. The CES Cultural Resources Manager (CRM) provides day-to-day management of the installation cultural resources through the application of the Air Force Environmental Impact Analysis Process (EIAP), close communication with specific program managers, and the utilization of other management tools.

Although the Base consists of approximately 5,090, acres there have been no significant archeological burial sites or artifact findings of significance to Native Americans. The likelihood of finding any significant artifacts at Minot AFB is very remote, though there are five buildings related to the Cold War era that are eligible for listing on the National Register of Historic Places.

However, there are no native plants or other natural resources known to be of significance to Native Americans and there are no historic landscapes; thus, management of natural resources does not impact any cultural resources. In addition to utilizing EIAP, other efforts are underway to inform individuals base-wide on how to help protect these cultural resources including outreach and education through the EMS process.

7.15 Public Outreach

Applicability Statement

This section applies to all USAF installations that maintain an INRMP. The installation is required to implement this element.

Program Overview/Current Management Practices

Minot AFB is located approximately 15 miles north of the City of Minot, ND and is surrounded on all sides by productive farm land with only a few residential homes in the vicinity. When you acknowledge the duel missions of the installation, the 5th Bomb Wing and the 91st Missile Wing, the uniqueness of Minot AFB becomes apparent. The INRMP is a public document and should be made available on the Base's public website following public affairs and judge advocate review. Existing natural resources are not consistent with routine public access; for example, there is no fishing, hunting or trapping on base.

In the past, the Base's Tree City Certification was a means for public outreach. However, outreach is provided as needed by the Public Affairs Office, for example, alerting citizens to mosquito spraying events that may impact them and providing information about base actions and accomplishments through the internet and local newspapers.

7.16 Climate Change Vulnerabilities

Applicability Statement

This section applies to USAF installations that have identified climate change risks, vulnerabilities, and adaptation strategies using authoritative region-specific climate science, climate projections, and existing tools. This section is applicable to this installation.

Program Overview/Current Management Practices

At lower-elevation areas of the Northern Great Plains, climate-induced land-use changes in agriculture can have cascading effects on closely entwined natural ecosystems, such as wetlands, and the diverse species and recreational opportunities they support (USGCRP, 2018). As more grasslands and wetlands are converted throughout the region, displaced wildlife are likely to seek stable grasslands like those on Minot AFB.

Among other anticipated changes, projected warmer and generally wetter conditions with elevated atmospheric carbon dioxide concentrations are expected to increase the abundance and competitive ability of weeds and invasive species (USGCRP, 2018). Increase of weeds in addition to noted chemical resistance in certain weeds (Sarangi, et. al., 2019) requires adaptive treatment strategies and continual consideration of desirable vegetation. Weeds and vegetation that are currently considered undesirable, may persist in the future and require treatments to reduce their function as wildlife habitat where they conflict with the mission.

7.17 Geographic Information Systems (GIS)

Applicability Statement

This section applies to all USAF installations that maintain an INRMP, since all geospatial information must be maintained within the USAF GeoBase system. The installation is required to implement this element.

Program Overview/Current Management Practices

The Minot AFB Geo-Integration Office consists of two sections that work together to acquire and update GIS data. The survey team gathers data using GPS equipment, an R7 receiver, and a Zypher-Model 2 antenna. The survey team then turns the data over to the GeoBase Analyst who checks it for errors and creates the new features to be added to our GeoDatabase. Lastly, the maps are updated with the newly acquired survey data.

Natural resources management can rely on the Geo-Integration Office to assist in the production of maps such as for wetlands and locations of shelterbelts, etc. The benefits of such data and data processing elevate the ability of the NRM to manipulate data to produce the best management plan.

8.0 MANAGEMENT GOALS AND OBJECTIVES

The installation establishes long term, expansive goals and supporting objectives to manage and protect natural resources while supporting the military mission. Goals express a vision for a desired condition for the installation's natural resources and are the primary focal points for INRMP implementation. Objectives indicate a management initiative or strategy for specific long or medium range outcomes and are supported by projects. Projects are specific actions that can be accomplished within a single year. Also, in cases where off-installation land uses may jeopardize USAF missions, this section may list specific goals and objectives

aimed at eliminating, reducing, or mitigating the effects of encroachment on military missions. These natural resources management goals for the future have been formulated by the preparers of the INRMP from an assessment of the natural resources, current condition of those resources, mission requirements, and management issues previously identified. Below are the integrated goals for the entire natural resources program.

The installation goals and objectives are displayed in the 'Installation Supplement' section below in a format that facilitates an integrated approach to natural resource management. By using this approach, measurable objectives can be used to assess the attainment of goals. Individual work tasks support INRMP objectives. The projects are key elements of the annual work plans and are programmed into the conservation budget, as applicable.

Installation Supplement – Management Goals and Objectives

GOAL 8.1: MANAGE LANDS BASE-WIDE, INCLUDING GEOGRAPHICALLY-SEPARATED UNITS, TO ENSURE ECOSYSTEM INTEGRITY WHILE ENHANCING THE AIR FORCE MISSION AND BASE FUNCTIONALITY.

- OBJECTIVE 8.1.1: Develop and implement land management strategies to manage open space on base including the control of noxious and invasive weed species as outlined in EO 13112.
    - Project 8.1.1.1: In collaboration with the Pest Management Shop, monitor 700 acres of targeted priority areas every 5 years.
    - Project 8.1.1.2: Working with the Pest Management Shop, implement annual control measures on 150 acres of noxious and invasive weeds in areas of high importance using chemical, physical, and/or biological control methods.
    - Project 8.1.1.3: Inventory the Russian olive tree distribution and reduce the population by 10% in priority treatment areas annually.
- OBJECTIVE 8.1.2: Maintain and conserve the quality of wetlands and water resources on Minot AFB by remaining in compliance with EO 11990, the Clean Water Act, and North Dakota state wetland regulations.
    - PROJECT 8.1.2.1: Develop a wetland management strategy that assesses the habitat value of wetlands on the base and ensures that management actions remain in compliance with EO 11990, the Clean Water Act, and North Dakota state wetland regulations.
    - PROJECT 8.1.2.2: Conduct a functional habitat assessment using the North Dakota Rapid Assessment Method for one third of the 170 acres of wetlands on base to evaluate land use, hydrology, water quality, update planning boundaries, and biological characteristics (plant community and invasive species), and update the management plan, developed in project 8.1.2.1, accordingly.
    - PROJECT 8.1.2.3: Adhere to the existing permitting process, inspect projects as needed, apply for permits, and track progress in a local database and close out permits annually to remain in compliance with North Dakota state wetland regulations.
- OBJECTIVE 8.1.3: Manage the tree and shelterbelt habitats on Minot AFB for providing wind and snow breaks, wildlife habitat, shade, dust control, noise abatement, and erosion control annually.
    - PROJECT 8.1.3.1: Coordinate biennially with grounds maintenance on the management of trees and shelterbelt-type plantings, windbreaks, visual barriers, and other natural infrastructure requirements of the installation Natural Resources program concerning mission requirements.
    - PROJECT 8.1.3.2: Working with grounds maintenance, develop an initial base-wide tree inventory.

    - PROJECT 8.1.3.3: Based on the results of the tree survey developed in project 8.1.3.2, develop a tree management plan with a procedure for identifying, removing, and replacing diseased and hazardous trees including recommendations for replacement tree species to reduce the probability of future disease or pest issues.
    - PROJECT 8.1.3.4: Identify the function of Russian olive shelterbelts and determine if removal or replacement is needed.
- OBJECTIVE 8.1.4: Working with the Operations flight, maintain the land surrounding the airfield to ensure the land is maintained in a manner that enhances airfield safety annually.
    - PROJECT 8.1.4.1: Coordinate annually with grounds maintenance and airfield safety personnel to ensure the vegetation and shelterbelts surrounding the airfield are maintained with a uniform cover to support airfield safety.
    - PROJECT 8.1.4.2: In conjunction with grounds maintenance, 5CES/CEN and airfield safety personnel, ensure the drainage system surrounding the airfield is maintained to avoid standing water.
    - PROJECT 8.1.4.3: Develop a vegetation management strategy. Strategy includes species composition management, invasive species control, maintenance frequency, and methodology.
    - PROJECT 8.1.4.4: Coordinate and integrate vegetation management strategy into INRMP, BASH plan, and ground maintenance contracts.
- OBJECTIVE 8.1.5: Maintain compliance with agricultural outlease by conducting spot inspections of the Dufresne riding club's horse pastures.
    - PROJECT 8.1.5.1: At least annually, coordinate with the US Department of Agriculture regarding the inspection of the Dufresne riding club's pastures to ensure compliance with the terms and conditions outlined in the lease and contact the real property officer as needed if lessee is in non-compliance.
    - PROJECT 8.1.5.2: Working with the real property officer, develop a process to ensure any recommendations based on the inspection of the Dufresne riding club's horse pastures, project 8.1.5.1, are incorporated into management practices and/or the lease as appropriate.
- OBJECTIVE 8.1.6: Maintain drainage channels on base to ensure proper function while maintaining discharge water quality.
    - PROJECT 8.1.6.1: Review management actions and develop a coordinated plan to ensure functionality and maintenance of drainage channels A and B that include environmentally appropriate methodologies and maintain discharge water quality.
    - PROJECT 8.1.6.2: Implement the drainage method improvement plan developed under project 8.1.6.1.
- OBJECTIVE 8.1.7: Evaluate land use at geographically separate units to determine if there are manageable resources.
    - PROJECT 8.1.7.1: Conduct inventory of natural resources at Geographically-Separate Units.

GOAL 8.2: MANAGE THREATENED, ENDANGERED, CANDIDATE, AND STATE SPECIES OF CONCERN WITH AN ECOSYSTEM-BASED APPROACH WHILE MAINTAINING THE INSTALLATION MISSION.

- OBJECTIVE 8.2.1: Provide for the conservation of migratory birds through monitoring and surveying efforts to include threatened, endangered, candidate and species of concern birds.
    - PROJECT 8.2.1.1: Conduct a spring/fall migrating bird population survey with an emphasis on bird species of concern identified by the USFWS Breeding Birds of Concern,

Endangered Species Act, and North Dakota Species of Conservation Priority for use in developing a management strategy.
    - PROJECT 8.2.1.2: Using the information collected in the bird survey, project 8.2.1.1, develop a bird management strategy developing strategies emphasizing species such as whooping cranes, piping plover, rufa red knot, and other threatened, endangered, candidate, and state species of concern.
    - PROJECT 8.2.1.3: Biennially monitor spring/fall migrating bird populations with an emphasis on bird species of concern identified by the USFWS Breeding Birds of Concern, Endangered Species Act, and North Dakota Species of Conservation Priority and update management plan, developed in project 8.2.1.2, as needed.
    - PROJECT 8.2.1.4: Work with the Operations Flight to develop and implement a notification tool to alert the base if/when whooping cranes are detected migrating through the area.
- OBJECTIVE 8.2.2: Manage the conservation of pollinators and mammals through inventory and monitoring to include potential threatened, endangered, candidate and species of concern.
    - PROJECT 8.2.2.1: Develop a management strategy for pollinators to include abundance and distribution surveys for Apoidea and other threatened, endangered, candidate, or state species of concern.
    - PROJECT 8.2.2.2: Implement the pollinator management plan to include monitoring for Dakota skipper or other threatened, endangered, candidate, and state species of concern with attributable habitat conservation, education, outreach, research, and monitoring as dictated by the ND Monarch and Native Pollinator Strategy.
    - PROJECT 8.2.2.3: Develop a management strategy for mammal species that are threatened, endangered, candidate, or listed as a state species of concern to include surveys for distribution and abundance.
    - PROJECT 8.2.2.4: Implement the mammalian management strategy to include monitoring for the northern long-eared bat and other threatened, endangered, candidate, or state species of concern.
    - PROJECT 8.2.2.5: Working with Entomology, implement the pollinator management plan to include monitoring to Apoidea, Lepidoptera, and other threatened, endangered, candidate, or state species of concern; and to evaluate the impact of pesticide applications on targeted species, targeted species predators, resident Apoidea and Lepidoptera in control habitat vs non-control habitat.

GOAL 8.3: MAINTAIN AN UP-TO-DATE INRMP WITH STAKEHOLDERS USING CURRENT GIS DATA TO SUPPORT NATURAL RESOURCE DECISION-MAKING AND FOSTER PARTNERSHIPS, OUTDOOR RECREATION, PUBLIC OUTREACH AND EDUCATION.

- OBJECTIVE 8.3.1: Maintain and update base INRMP to comply with AFMAN 32-7003 and the Sikes Act.
    - PROJECT 8.3.1.1: Annually conduct review of the INRMP and update new information to include the development of future work plans.
- OBJECTIVE 8.3.2: Provide additional opportunities for outdoor recreation on base.
    - PROJECT 8.3.2.1: Develop an informational brochure regarding wildlife on base to include a checklist of potential wildlife that can be observed on base.

9.0 INRMP IMPLEMENTATION, UPDATE, AND REVISION PROCESS

9.1 Natural Resources Management Staffing and Implementation

Staffing

Review and utilization of the information that is contained in this INRMP is the responsibility of the Base management, and it is imperative that Natural Resource Management and Installation Management Flight staff continue to review the current operations and the INRMP to ensure that the information contained within this plan is relevant and current to the mission.

This INRMP will need to be a living document that stays current and updated to the ensure that the document effectively addresses natural resource issues as they relate to the land use management and mission of the Base. There are short-to longer-term goals that will effectively address these resources and ensure natural resources are not in conflict with mission objectives. In order to remain adaptive, the INRMP will be reviewed each year with a long-term vision in mind. The adaptability will be implemented through the short-term objectives that can remain flexible enough to effectively address immediate needs while attaining the long term-vision.

16 U.S.C. § 670a(1)(B) of the Sikes Act states:

> "Integrated natural resources management plan - to facilitate the program, the Secretary of each military department shall prepare and implement an integrated natural resources management plan for each military installation in the United States . . ."

INRMPs are prepared in cooperation with the USFWS and appropriate state fish and wildlife agencies having jurisdiction in the state in which the installation is located. The USFWS and the state of North Dakota should be involved early in the scoping, design and preparation of the INRMP. After the draft INRMP has received initial Air Force approval, it goes out to the USFWS and the NDGFD for their review and comments. The INRMP will reflect the mutual agreement of the USFWS and the state concerning the conservation, protection and management of fish and wildlife and other natural resources. In addition, the INRMP is made available to the public for a review and comment period. After receiving all comments and the incorporation of relevant edits, the final INRMP is signed by the Wing Commander, the North Dakota Ecological Services Field Office supervisor of the USFWS, and the commissioner of the NDGFD.

Natural resource management on Minot AFB falls under the responsibility of the Natural Resource Manager (NRM) with help from other groups such as grounds maintenance and safety. Due to the lack of an NRM on base over the last several years, these other groups on Base have taken on more responsibilities for the management of natural resources.

Implementation

The 5 CES Natural Resources Manager is the primarily responsible for INRMP implementation on Minot AFB. Through annual coordination of work plans, the USFWS and NDGF are given priority for execution of INRMP projects that are not completed in-house with Air Force personnel, per 16 U.S.C. § 670a (1)(C). The execution strategy for the INRMP Work Plan is coordinated with priority agencies where the agencies identify projects they have interest in executing. All other implementation will be performed through other authorized acquisition methods. Programming, budgeting, and execution of contracts and agreements for INRMP execution is conducted by AFCEC CZOM, Offutt ISS Natural Resources Manager.

Other in-house execution offices of primary responsibility for INRMP projects are identified in Chapter 10 of this plan.

9.2 Monitoring INRMP Implementation

Implementation of the INRMP is summarized annually through an Annual INRMP Summary Report that is provided to the USFWS Ecological Services Office and the NDGF. This summary is completed in coordination with AFCEC CZOM, Offutt ISS and is reported in the EESOH-MIS end of year data call.

9.3 Annual INRMP Review and Update Requirements

This INRMP has been approved by the Natural Resources Program Manager (5 CES/CEIEC), the Minot AFB Environmental, Safety, and Occupational Health (ESOH) Council, Air Force Civil Engineering Center (AFCEC) and Air Force Global Strike Command (HQ AFGSC/A7N). Changes to the INRMP will be coordinated and initially approved by the Natural Resources Program Manager. In the event of any unresolved conflict concerning proposed revisions, the ESOH Council will make the final decision.

The original draft of the INRMP undergoes a review process including base personnel, USFWS, and NDGFD. Other agencies are also included for coordination specific to goals relating to their area of knowledge, such as USDA-Animal and Plant Health Inspection Service (APHIS) for BASH threat management. Additional state and federal agencies will be contacted for input into project design and implementation as needed.

Due to the nature of natural resource management on the Base, the INRMP will need to be reviewed and updated annually. This allows for modifications to be made as projects are implemented and needs change. The annual review will be conducted collaboratively by staff at Minot AFB, USFWS staff, and NDGFD. Objectives will be reviewed to ensure they are relevant and applicable to the current mission and ensure that they still meet with the regulations that apply. Significant changes in operations of the Base that affect land use changes, changes in the knowledge of the natural resources, or changes in regulations will require a more thorough evaluation of the role of natural resources to attain the goals of the mission.

10.0 ANNUAL WORK PLANS

The INRMP Annual Work Plans are included in this section. These projects are listed by fiscal year, including the current year and four succeeding years. For each project and activity, a specific timeframe for implementation is provided (as applicable), as well as the appropriate funding source and priority for implementation. The work plans provide all the necessary information for building a budget within the USAF framework. Priorities are defined as follows:

- High: The INRMP signatories assert that if the project is not funded the INRMP is not being implemented and the USAF is non-compliant with the Sikes Act; or that it is specifically tied to an INRMP goal and objective and is part of a “Benefit of the Species” determination necessary for Endangered Species Act (ESA) Sec 4(a)(3)(B)(i) critical habitat exemption.
- Medium: Project supports a specific INRMP goal and objective and is deemed by INRMP signatories to be important for preventing non-compliance with a specific requirement within a natural resources law or by EO 13112, *Exotic and Invasive Species*. However, the INRMP signatories would not contend that the INRMP is not being implemented if not accomplished within the programmed year due to other priorities.
- Low: Project supports a specific INRMP goal and objective, enhances conservation resources or the integrity of the installation mission, and/or supports long-term compliance with specific requirements within natural resources law; but is not directly tied to specific compliance within the proposed year of execution.

PLAN YEAR	INRMP PROJECT NUMBER AND DESCRIPTION	AIR FORCE FUNDS REQUEST NUMBER OR IN-HOUSE OPR	PROPOSED FUNDS EXECUTION	PRIORITY	SWAP and/or SPSOC LINK
GOAL 1– Manage lands base-wide, including geographically-separated units, to ensure ecosystem integrity while enhancing the Air Force mission and base functionality.					
Objective 1.1: Develop and implement land management strategies to manage open space on base including the control of noxious and invasive weed species as outlined in EO 13112.					
2022	Project 1.1.1: In collaboration with the Pest Management Shop, monitor 700 acres of targeted priority areas every 5 years.	QJVFA53226121	USFWS	Medium	Yes
2020-2025	Project 1.1.2: Working with the Pest Management Shop, implement annual control measures on 150 acres of noxious and invasive weeds in areas of high importance using chemical, physical, and/or biological control methods.	QJVFA53206121, QJVFA53216121, QJVFA53226121, QJVFA53236121, QJVFA53246121, QJVFA53256121	USFWS	Medium	Yes
2020-2025	Project 1.1.3: Inventory the Russian olive tree distribution and reduce the population by 10% in priority treatment areas annually.	QJVFA53206121, QJVFA53216121, QJVFA53226121, QJVFA53236121, QJVFA53246121, QJVFA53256121	USFWS	Medium	Yes
Objective 1.2: Maintain and conserve the quality of wetlands and water resources on Minot AFB by remaining in compliance with EO 11990, the Clean Water Act, and North Dakota state wetland regulations.					
Complete 2017	Project 1.2.1: Develop a wetland management plan that assesses the habitat value of wetlands on the base and ensures that management actions remain in compliance with EO 11990, the Clean Water Act, and North Dakota state wetland regulations.			Medium	Yes

PLAN YEAR	INRMP PROJECT NUMBER AND DESCRIPTION	AIR FORCE FUNDS REQUEST NUMBER OR IN-HOUSE OPR	PROPOSED FUNDS EXECUTION	PRIORITY	SWAP and/or SPSOC LINK
Complete 2017	Project 1.2.2: Conduct a functional habitat assessment using the North Dakota Rapid Assessment Method for one third of the 170 acres of wetlands on base to evaluate land use, hydrology, water quality, update planning boundaries, and biological characteristics (plant community and invasive species), and update the management plan, developed in project 8.1.2.1, accordingly.			Medium	Yes
2020-2025	Project 1.2.3: Adhere to the existing permitting process, inspect projects as needed, apply for permits, and track progress in a local database and close out permits annually to remain in compliance with North Dakota state wetland regulations.	NRM	In-house	Medium	Yes
Objective 1.3: Manage the tree and shelterbelt habitats on Minot AFB for providing wind and snow breaks, wildlife habitat, shade, dust control, noise abatement, and erosion control annually.					
2021, 2023, 2025	Project 1.3.1: Coordinate biennially with grounds maintenance on the management of trees, shelterbelt-type plantings, windbreaks, visual barriers and other natural infrastructure requirements of the installation Natural Resources program concerning mission requirements.	NRM/CEOHP	In-house	Low	No
2020	Project 1.3.2: Working with grounds maintenance, develop an initial base-wide tree inventory.	NRM/CEOHP		Low	No

PLAN YEAR	INRMP PROJECT NUMBER AND DESCRIPTION	AIR FORCE FUNDS REQUEST NUMBER OR IN-HOUSE OPR	PROPOSED FUNDS EXECUTION	PRIORITY	SWAP and/or SPSOC LINK
2020-2025	Project 1.3.3: Based on the results of the tree survey developed in project 8.1.3.2, develop a tree management plan with a procedure for identifying, removing, and replacing diseased and hazardous trees including recommendations for replacement tree species to reduce the probability of future disease or pest issues.	NRM/CEOHP		Low	No
2022	Project 1.3.4: Identify the function of Russian olive shelterbelts and determine if removal or replacement is needed.	QJVFA53226121	USFWS	Low	No
Objective 1.4: Working with the Operations flight, maintain the land surrounding the airfield to ensure the land is maintained in a manner that enhances airfield safety annually.					
2020-2025	Project 1.4.1 Coordinate annually with grounds maintenance and airfield safety personnel to ensure the vegetation and shelterbelts surrounding the airfield are maintained with a uniform cover to support airfield safety.	NRM/CEOHP/ SEF	In-house	Medium	No
2020-2025	Project 1.4.2: In conjunction with grounds maintenance, 5CES/CEN and airfield safety personnel, ensure the drainage system surrounding the airfield is maintained to avoid standing water annually.	NRM/CEOHP/ SEF	In-house	Medium	No

PLAN YEAR	INRMP PROJECT NUMBER AND DESCRIPTION	AIR FORCE FUNDS REQUEST NUMBER OR IN-HOUSE OPR	PROPOSED FUNDS EXECUTION	PRIORITY	SWAP and/or SPSOC LINK
2020-2025	Project 1.4.3 Develop a vegetation management strategy. Strategy includes species composition management, invasive species control, maintenance frequency and methodology.	NRM/CEOHP QJVFA53206121, QJVFA53216121, QJVFA53226121, QJVFA53236121, QJVFA53246121, QJVFA53256121	USFWS & NRM	Medium	No
2020-2025	Project 1.4.4 Coordinate and integrate vegetation management strategy into INRMP, BASH plan, and grounds maintenance contracts.	NRM	In-house	Medium	No
Objective 1.5: Maintain compliance with agricultural outlease by conducting spot inspections of the Dufresne riding club's horse pastures.					
2020-2025	Project 1.5.1: At least annually, coordinate with the US Department of Agriculture regarding the inspection of the Dufresne riding club's pastures to ensure compliance with the terms and conditions outlined in the lease and contact the real property officer as needed if lessee is in non-compliance.	NRM	In-house	Medium	Yes
2022	Project 1.5.2: Working with the real property officer, develop a process to ensure any recommendations based on the inspection of the Dufresne riding club's horse pastures, project 8.1.5.1, are incorporated into management practices and/or the lease as appropriate.	NRM-5CES/CEOR	In-house	Medium	Yes
Objective 1.6: Maintain drainage channels on base to ensure proper function while maintaining discharge water quality.					

PLAN YEAR	INRMP PROJECT NUMBER AND DESCRIPTION	AIR FORCE FUNDS REQUEST NUMBER OR IN-HOUSE OPR	PROPOSED FUNDS EXECUTION	PRIORITY	SWAP and/or SPSOC LINK
2020-2025	Project 1.6.1: Review management actions and develop a coordinated plan to ensure functionality and maintenance of drainage channels A and B that include environmentally appropriate methodologies and maintain discharge water quality.	CEI	In-house	Low	No
2022	Project 1.6.2: Implement the drainage method improvement plan developed under project 8.1.6.1		In-house	Low	No
Objective 1.7: Evaluate land use at geographically separate units to determine if there are manageable resources.					
2020-2022	Project 1.7.1: Conduct inventory of natural resources at Geographically-Separate Units.	QJVFA53206119, QJVFA53216119, QJVFA53226119	USFWS	Medium	Yes
GOAL 2– Manage threatened, endangered, candidate, and state species of concern with an ecosystem-based approach while maintaining the installation mission.					
Objective 2.1: Provide for the conservation of migratory birds through monitoring and surveying efforts to include threatened, endangered, candidate and species of concern birds.					
Complete 2017	Project 2.1.1: Conduct a spring/fall migrating bird population survey with an emphasis on bird species of concern identified by the USFWS Breeding Birds of Concern, Endangered Species Act, and North Dakota Species of Conservation Priority for use in developing a management plan.		USFWS	Medium	Yes

PLAN YEAR	INRMP PROJECT NUMBER AND DESCRIPTION	AIR FORCE FUNDS REQUEST NUMBER OR IN-HOUSE OPR	PROPOSED FUNDS EXECUTION	PRIORITY	SWAP and/or SPSOC LINK
Complete 2018	Project 2.1.2: Using the information collected in the bird survey, project 8.2.1.1, develop a bird management plan developing strategies emphasizing species such as whooping cranes, piping plover, rufa red knot, Sprague's pipit, and other threatened, endangered, candidate, and state species of concern.		USFWS	Medium	Yes
2020, 2022, 2024	Project 2.1.3: Biennially monitor spring/fall migrating bird populations with an emphasis on bird species of concern identified by the USFWS Breeding Birds of Concern, Endangered Species Act, and North Dakota Species of Conservation Priority and update management plan, developed in project 2.1.2, as needed. Conduct events to spot-check bird species presence and identification.	QJVFA53206120, QJVFA53226120, QJVFA53246120	USFWS	Low	Yes
2020, 2022	Project 2.1.4: Work with the Operations Flight to develop and implement a notification tool to alert the base if/when whooping cranes are detected migrating through the area.	QJVFA53206120, QJVFA53226120,	USFWS	Medium	Yes
Objective 2.2: Manage the conservation of pollinators and mammals through inventory and monitoring to include potential threatened, endangered, candidate and species of concern.					
Complete 2017	Project 2.2.1: Develop a management plan for pollinators to include abundance and distribution surveys for apidae and threatened, endangered, candidate, or			Medium	Yes

PLAN YEAR	INRMP PROJECT NUMBER AND DESCRIPTION	AIR FORCE FUNDS REQUEST NUMBER OR IN-HOUSE OPR	PROPOSED FUNDS EXECUTION	PRIORITY	SWAP and/or SPSOC LINK
	state species of concern.				
2020-2021	Project 2.2.2: Implement the pollinator management plan to include monitoring for Dakota skipper, apidae or other threatened, endangered, candidate, state species of concern with attributable habitat conservation, education, outreach, research and monitoring as dictated by the ND Monarch and Native Pollinator Strategy.	QJVFA53206119, QJVFA53216119	USFWS	Medium	Yes
2019	Project 2.2.3: Develop a management plan for mammal species that are threatened, endangered, candidate, or listed as a state species of concern to include surveys for distribution and abundance.	QJVF197013	USFWS	Medium	Yes
2019	Project 2.2.4: Implement the mammalian management plan to include monitoring for the northern long-eared bat and other threatened, endangered, candidate, or state species of concern.	QJVF197014	USFWS	Medium	Yes

PLAN YEAR	INRMP PROJECT NUMBER AND DESCRIPTION	AIR FORCE FUNDS REQUEST NUMBER OR IN-HOUSE OPR	PROPOSED FUNDS EXECUTION	PRIORITY	SWAP and/or SPSOC LINK
2020	Project 2.2.5: Working with Entomology, implement the pollinator management plan to include monitoring to Apoidea, Lepidoptera, and other threatened, endangered, candidate, or state species of concern; and to evaluate the impact of pesticide applications on targeted species, targeted species predators, resident Apoidea and Lepidoptera in control habitat vs non-control habitat.	QJVFA53206119	USFWS	Medium	Yes
GOAL 3– Maintain an up-to-date INRMP with Stakeholders Using Current GIS Data to Support Natural resources Decision-maing and Foster Partnerships, Outdoor Recreation, Public Outreach , and Education.					
Objective 3.1: Maintain and update base INRMP to comply with AFMAN 32-7003 and the Sikes Act.					
2020-2025	Project 3.1.1: Annually conduct review of the INRMP and update new information to include the development of future work plans.	NRM	In-house	High	No
Objective 3.2: Provide additional opportunities for outdoor recreation on base.					
2021	Project 3.2.1: Develop an informational brochure regarding wildlife on base to include a checklist of potential wildlife that can be observed on base.	NRM	In-house	Low	No

SWAP = State Wildlife Action Plan
SPSOC = State Plant Species of Concern
NRM = Natural Resources Manager
CEI = 28th Civil Engineer Environmental
CES = 28th Civil Engineer Squadron
AFCEC = Air Force Civil Engineer Center
CEO = 28th Civil Engineer Operations
AFI = Air Force Instruction
USFWS = United States Fish and Wildlife Service

CZOF = Air Force Wildland Fire Branch
OPR = Office of Primary Responsibility

11.0 REFERENCES

11.1 Standard References *(Applicable to all USAF installations)*

- AFMAN 32-7003, *Environmental Conservation*
- Sikes Act
- eDASH Natural Resources Program Page
- Natural Resources Playbook
- DoDI 4715.03, *Natural Resources Conservation Program*

11.2 Installation References

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12.0 ACRONYMS

12.1 Standard Acronyms (Applicable to all USAF installations)

- eDASH Acronym Library
- Natural Resources Playbook – Acronym Section
- U.S. EPA Terms & Acronyms

12.2 Installation Acronyms

N/A

13.0 DEFINITIONS

13.1 Standard Definitions (Applicable to all USAF installations)

- Natural Resources Playbook – Definitions Section

13.2 Installation Definitions

- *Add unique state, local, and installation-specific definitions.*

14.0 APPENDICES

14.1 Standard Appendices

Appendix A. Annotated Summary of Key Legislation Related to Design and Implementation of the INRMP

Federal Public Laws and Executive Orders	
National Defense Authorization Act of 1989, Public Law (P.L.) 101-189; Volunteer Partnership Cost-Share Program	Amends two Acts and establishes volunteer and partnership programs for natural and cultural resources management on DoD lands.
Defense Appropriations Act of 1991, P.L. 101-511; Legacy Resource Management Program	Establishes the "Legacy Resource Management Program" for natural and cultural resources. Program emphasis is on inventory and stewardship responsibilities of biological, geophysical, cultural, and historic resources on DoD lands, including restoration of degraded or altered habitats.
EO 11514, *Protection and Enhancement of Environmental Quality*	Federal agencies shall initiate measures needed to direct their policies, plans, and programs to meet national environmental goals. They shall monitor, evaluate, and control agency activities to protect and enhance the quality of the environment.
EO 11593, *Protection and Enhancement of the Cultural Environment*	All Federal agencies are required to locate, identify, and record all cultural resources. Cultural resources include sites of archaeological, historical, or architectural significance.
EO 11987, *Exotic Organisms*	Agencies shall restrict the introduction of exotic species into the natural ecosystems on lands and waters which they administer.
EO 11988, *Floodplain Management*	Provides direction regarding actions of Federal agencies in floodplains, and requires permits from state, territory and Federal review agencies for any construction within a 100-year floodplain and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for acquiring, managing and disposing of Federal lands and facilities.
EO 11989, *Off-Road vehicles on Public Lands*	Installations permitting off-road vehicles to designate and mark specific areas/trails to minimize damage and conflicts, publish information including maps, and monitor the effects of their use. Installations may close areas if adverse effects on natural, cultural, or historic resources are observed.
EO 11990, *Protection of Wetlands*	Requires Federal agencies to avoid undertaking or providing assistance for new construction in wetlands unless there is no practicable alternative, and all practicable measures to minimize harm to wetlands have been implemented and to preserve and enhance the natural and

Federal Public Laws and Executive Orders	
	beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; and (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.
EO 12088, *Federal Compliance with Pollution Control Standards*	This EO delegates responsibility to the head of each executive agency for ensuring all necessary actions are taken for the prevention, control, and abatement of environmental pollution. This order gives the U.S. Environmental Protection Agency (US EPA) authority to conduct reviews and inspections to monitor federal facility compliance with pollution control standards.
EO 12898, *Environmental Justice*	This EO requires certain federal agencies, including the DoD, to the greatest extent practicable permitted by law, to make environmental justice part of their missions by identifying and addressing disproportionately high and adverse health or environmental effects on minority and low-income populations.
EO 13112, *Exotic and Invasive Species*	To prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.
EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*	The USFWS has the responsibility to administer, oversee, and enforce the conservation provisions of the Migratory Bird Treaty Act, which includes responsibility for population management (e.g., monitoring), habitat protection (e.g., acquisition, enhancement, and modification), international coordination, and regulations development and enforcement.
United States Code	
Animal Damage Control Act (7 U.S.C. § 426-426b, 47 Stat. 1468)	Provides authority to the Secretary of Agriculture for investigation and control of mammalian predators, rodents, and birds. DoD installations may enter into cooperative agreements to conduct animal control projects.
Bald and Golden Eagle Protection Act of 1940, as amended; 16 U.S.C. 668-668c	This law provides for the protection of the bald eagle (the national emblem) and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the Act.
Clean Air Act, (42 U.S.C. § 7401– 7671q, July 14, 1955, as amended)	This Act, as amended, is known as the Clean Air Act of 1970. The amendments made in 1970 established the core of the clean air program. The primary objective is to establish Federal standards for air pollutants. It is designed to improve air quality in areas of the country which do not meet federal standards and to prevent significant deterioration in areas where air quality exceeds those standards.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	Authorizes and administers a program to assess damage, respond to releases of hazardous substances, fund cleanup, establish clean-up standards, assign liability, and other efforts to address environmental

Federal Public Laws and Executive Orders	
of 1980 (Superfund) (26 U.S.C. § 4611–4682, P.L. 96-510, 94 Stat. 2797), as amended	contaminants. Installation Restoration Program guides cleanups at DoD installations.
Endangered Species Act (ESA) of 1973, as amended; P.L. 93-205, 16 U.S.C. § 1531 et seq.	Protects threatened, endangered, and candidate species of fish, wildlife, and plants and their designated critical habitats. Under this law, no federal action is allowed to jeopardize the continued existence of an endangered or threatened species. The ESA requires consultation with the USFWS and the NOAA Fisheries (National Marine Fisheries Service) and the preparation of a biological evaluation or a biological assessment may be required when such species are present in an area affected by government activities.
Federal Aid in Wildlife Restoration Act of 1937 (16 U.S.C. § 669–669i; 50 Stat. 917) (Pittman-Robertson Act)	Provides federal aid to states and territories for management and restoration of wildlife. Fund derives from sports tax on arms and ammunition. Projects include acquisition of wildlife habitat, wildlife research surveys, development of access facilities, and hunter education.
Federal Environmental Pesticide Act of 1972	Requires installations to ensure pesticides are used only in accordance with their label registrations and restricted-use pesticides are applied only by certified applicators.
Federal Land Use Policy and Management Act, 43 U.S.C. § 1701–1782	Requires management of public lands to protect the quality of scientific, scenic, historical, ecological, environmental, and archaeological resources and values; as well as to preserve and protect certain lands in their natural condition for fish and wildlife habitat. This Act also requires consideration of commodity production such as timbering.
Federal Noxious Weed Act of 1974, 7 U.S.C. § 2801–2814	The Act provides for the control and management of non-indigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health.
Federal Water Pollution Control Act (Clean Water Act [CWA]), 33 U.S.C. §1251–1387	The CWA is a comprehensive statute aimed at restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. Primary authority for the implementation and enforcement rests with the US EPA.
Fish and Wildlife Conservation Act (16 U.S.C. § 2901–2911; 94 Stat. 1322, PL 96-366)	Installations encouraged to use their authority to conserve and promote conservation of nongame fish and wildlife in their habitats.
Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.)	Directs installations to consult with the USFWS, or state or territorial agencies to ascertain means to protect fish and wildlife resources related to actions resulting in the control or structural modification of any natural stream or body of water. Includes provisions for mitigation and reporting.
Lacey Act of 1900 (16 U.S.C. § 701, 702, 32 Stat. 187, 32 Stat. 285)	Prohibits the importation of wild animals or birds or parts thereof, taken, possessed, or exported in violation of the laws of the country or territory of origin. Provides enforcement and penalties for violation of wildlife related Acts or regulations.
Leases: Non-excess Property of Military Departments, 10 U.S.C. § 2667, as amended	Authorizes DoD to lease to commercial enterprises Federal land not currently needed for public use. Covers agricultural outleasing program.

Federal Public Laws and Executive Orders	
Migratory Bird Treaty Act 16 U.S.C. § 703–712	The Act implements various treaties for the protection of migratory birds. Under the Act, taking, killing, or possessing migratory birds is unlawful without a valid permit.
National Environmental Policy Act of 1969 (NEPA), as amended; P.L. 91-190, 42 U.S.C. § 4321 et seq.	Requires federal agencies to utilize a systematic approach when assessing environmental impacts of government activities. Establishes the use of environmental impact statements. NEPA proposes an interdisciplinary approach in a decision-making process designed to identify unacceptable or unnecessary impacts on the environment. The Council of Environmental Quality (CEQ) created Regulations for Implementing the National Environmental Policy Act [40 Code of Federal Regulations (CFR) Parts 1500– 1508], which provide regulations applicable to and binding on all Federal agencies for implementing the procedural provisions of NEPA, as amended.
National Historic Preservation Act, 16 U.S.C. § 470 et seq.	Requires federal agencies to take account of the effect of any federally assisted undertaking or licensing on any district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP). Provides for the nomination, identification (through listing on the NRHP), and protection of historical and cultural properties of significance.
National Trails Systems Act (16 U.S.C. § 1241–1249)	Provides for the establishment of recreation and scenic trails.
National Wildlife Refuge Acts	Provides for establishment of National Wildlife Refuges through purchase, land transfer, donation, cooperative agreements, and other means.
National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd–668ee)	Provides guidelines and instructions for the administration of Wildlife Refuges and other conservation areas.
Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. § 3001–13; 104 Stat. 3042), as amended	Established requirements for the treatment of Native American human remains and sacred or cultural objects found on Federal lands. Includes requirements on inventory, and notification.
Rivers and Harbors Act of 1899 (33 U.S.C. § 401 et seq.)	Makes it unlawful for the USAF to conduct any work or activity in navigable waters of the United States without a federal permit. Installations should coordinate with the U.S. Army Corps of Engineers (USACE) to obtain permits for the discharge of refuse affecting navigable waters under National Pollutant Discharge Elimination System (NPDES) and should coordinate with the USFWS to review effects on fish and wildlife of work and activities to be undertaken as permitted by the USACE.
Sale of certain interests in land, 10 U.S.C. § 2665	Authorizes sale of forest products and reimbursement of the costs of management of forest resources.
Soil and Water Conservation Act (16 U.S.C. § 2001, P.L. 95-193)	Installations shall coordinate with the Secretary of Agriculture to appraise, on a continual basis, soil/water-related resources. Installations will develop and update a program for furthering the conservation, protection, and enhancement of these resources consistent with other federal and local programs.

Federal Public Laws and Executive Orders	
Sikes Act (16 U.S.C. § 670a–670l, 74 Stat. 1052), as amended	Provides for the cooperation of DoD, the Departments of the Interior (USFWS), and the State Fish and Game Department in planning, developing, and maintaining fish and wildlife resources on a military installation. Requires development of an INRMP and public access to natural resources and allows collection of nominal hunting and fishing fees. NOTE: AFMAN 32-7003 sec 3.11. Staffing. As defined in DoDI 4715.03, use professionally trained natural resources management personnel with a degree in the natural sciences to develop and implement the installation INRMP. (T-0). 3.9.1. Outsourcing Natural Resources Management. As stipulated in the Sikes Act, 16 U.S.C. § 670 et. seq., the Office of Management and Budget Circular No. A-76, Performance of Commercial Activities, August 4, 1983 (Revised May 29, 2003) does not apply to the development, implementation and enforcement of INRMPs. Activities that require the exercise of discretion in making decisions regarding the management and disposition of government owned natural resources are inherently governmental. When it is not practicable to utilize DoD personnel to perform inherently governmental natural resources management duties, obtain these services from federal agencies having responsibilities for the conservation and management of natural resources.
DoD Policy, Directives, and Instructions	
DoD Instruction 4150.07 *DoD Pest Management Program* dated 29 May 2008	Implements policy, assigns responsibilities, and prescribes procedures for the DoD Integrated Pest Management Program.
DoD Instruction 4715.1, *Environmental Security*	Establishes policy for protecting, preserving, and (when required) restoring and enhancing the quality of the environment. This instruction also ensures environmental factors are integrated into DoD decision-making processes that could impact the environment, and are given appropriate consideration along with other relevant factors.
DoD Instruction (DoDI) 4715.03, *Natural Resources Conservation Program*	Implements policy, assigns responsibility, and prescribes procedures under DoDI 4715.1 for the integrated management of natural and cultural resources on property under DoD control.
OSD Policy Memorandum – 17 May 2005 – *Implementation of Sikes Act Improvement Amendments: Supplemental Guidance Concerning Leased Lands*	Provides supplemental guidance for implementing the requirements of the Sikes Act in a consistent manner throughout DoD. The guidance covers lands occupied by tenants or lessees or being used by others pursuant to a permit, license, right of way, or any other form of permission. INRMPs must address the resource management on all lands for which the subject installation has real property accountability, including leased lands. Installation commanders may require tenants to accept responsibility for performing appropriate natural resource management actions as a condition of their occupancy or use, but this does not preclude the requirement to address the natural resource management needs of these lands in the installation INRMP.
OSD Policy Memorandum – 1 November 2004 – *Implementation of Sikes Act*	Emphasizes implementing and improving the overall INRMP coordination process. Provides policy on scope of INRMP review, and public comment on INRMP review.

Federal Public Laws and Executive Orders	
Improvement Act Amendments: Supplemental Guidance Concerning INRMP Reviews	
OSD Policy Memorandum – 10 October 2002 – *Implementation of Sikes Act Improvement Act: Updated Guidance*	Provides guidance for implementing the requirements of the Sikes Act in a consistent manner throughout DoD and replaces the 21 September 1998 guidance Implementation of the Sikes Act Improvement Amendments. Emphasizes implementing and improving the overall INRMP coordination process and focuses on coordinating with stakeholders, reporting requirements and metrics, budgeting for INRMP projects, using the INRMP as a substitute for critical habitat designation, supporting military training and testing needs, and facilitating the INRMP review process.
USAF Instructions and Directives	
32 CFR Part 989, as amended, and AFMAN 32-7003, *Environmental Conservation*	Provides guidance and responsibilities in the EIAP for implementing INRMPs. Implementation of an INRMP constitutes a major federal action and therefore is subject to evaluation through an Environmental Assessment or an Environmental Impact Statement.
AFMAN 32-7003*, Environmental Conservation*	Provides guidance and responsibilities related to the USAF comprehensive planning process on all USAF-controlled lands.
AFMAN 32-7003, *Environmental Conservation*	Implements AFPD 32-70, *Environmental Considerations in Air Force Programs and Activities;* DoDI 4715.03, *Natural Resources Conservation Program*; and DoDI 7310.5, *Accounting for Sale of Forest Products*. It explains how to manage natural resources on USAF property in compliance with Federal, state, territorial, and local standards
AFMAN 32-7003, *Environmental Conservation*	This instuction implements AFPD 32-70 and DoDI 4710.1, *Archaeological and Historic Resources Management.* It explains how to manage cultural resources on USAF property in compliance with Federal, state, territorial, and local standards.
AFPD 32-70, *Environmental Considerations in Air Force Programs and Activities*	Outlines the USAF mission to achieve and maintain environmental quality on all USAF lands by cleaning up environmental damage resulting from past activities, meeting all environmental standards applicable to present operations, planning its future activities to minimize environmental impacts, managing responsibly the irreplaceable natural and cultural resources it holds in public trust and eliminating pollution from its activities wherever possible. AFPD 32-70 also establishes policies to carry out these objectives.
Policy Memo for Implementation of Sikes Act Improvement Amendments, HQ USAF Environmental Office (USAF/ILEV) on January 29, 1999	Outlines the USAF interpretation and explanation of the Sikes Act and Improvement Act of 1997.

14.2 Installation Appendices

Appendix B.

Appendix B. Tables

Turf Grasses Found on Minot AFB

Species	Seed mixture
Crested Wheatgrass/Kentucky Bluegrass	90/10 percentage seed mixture
Kentucky Bluegrass/Fescue/Rye	10/45/45

Ground Covers Found on Minot AFB

Common Name	Scientific Name
Prince of Wales Juniper	*Juniperus horizontalis* var. 'Prince of Wales'
Creeping Juniper	*Juniperus horizontalis*

Shrub Species Found on Minot AFB

Common Name	Scientific Name
Tartarian Honeysuckle	*Lonicera tatarica*
Buffaloberry	*Shepherdia argentea*
Schubert Chokecherry	*Prunus virginina* var. 'Schuben'
Common Lilac	*Syringa vulgaris*
Sand Cherry	*Prunus besseyi*
Red Osier Dogwood	*Comus stolonifera*
Late Lilac	*Syringa villosa*
Globe Arbor Vitae	*Thuja occidentalis* var. 'Techny Globe'
Savin Juniper	*Juniperus sabina* var. 'Arcadia'
Common Juniper	*Juniperus commonis*
Russian Pea Shrub	*Caragana fruta*

Evergreen Tree Species Found on Minot AFB

Common Name	Scientific Name
Ponderosa Pine	*Pinus ponderosa*
Eastern Red Cedar	*Juniperus virginiana*
Western Red Cedar	*Juniperus scopulorum*
Black Hills Spruce	*Picea glauca densata*
Western Yellow Pine	*Pinus ponderosa scopulorum*

Deciduous Tree Species Found on Minot AFB

Common Name	Scientific Name
Black Walnut	*Juglans nigra*
Golden Willow	*Salix alba* var. 'Tristis'
Midwest Crabapple	*Malus ioensis*
Manitou	*Populus deltoides*
Poplar (Northwest)	*Populus alba* var. 'Northwest'

Common Name	Scientific Name
Plains Cottonwood	*Populus deltoides* var. 'Robusta'
Lombardy	*Populus nigra* var. 'Talica'
Poplar (Bolleana)	*Populus alba* var. 'Pyramidalis'
Soft Maple	*Acer saccharinum*
Siberian Larch	*Larix laricina*
Arnur Maple	*Acer ginrala*
Elm	*Ulmus americana*
Boxelder	*Acer negundo*
Russian-olive	*Elaeagnus angustifolia*
Green Ash	*Fraxinus pennsylvanica*
Bur Oak	*Quercus macrocarpa*
White Willow	*Salix alba*
Seedless Cottonwood	*Populus angustifolia*

Vegetation Species Recorded During Wetland Survey at Minot AFB (ERM, 2011)

Common Name	Scientific Name	Indicator Status (Region 4)
American sloughgrass	*Beckmannia syzigachne*	OBL
Kentucky bluegrass	*Poa pratensis*	FACU
Common cattail	*Typha latifolia*	OBL
Narrow-leaved cattail	*Typha angustifolia*	OBL
Soft-stem bulrush	*Scirpus validus*	OBL
Common reed	*Phragmites australis*	FACW
Three-square	*Scirpus pungens*	OBL
Curly dock	*Rumex crispus*	FACW
Swamp smartweed	*Polygonum coccineum*	OBL
Red-stemmed spikerush	*Eleocharis erythropoda*	OBL
Spikerush	*Eleocharis macrostachya*	OBL
Soft rush	*Juncus effuses*	OBL
Foxtail barley	*Hordeum jubatum*	FACW
Yellow sedge	*Carex flava*	OBL
Prairie cordgrass	*Spartina pectinata*	FACW
Duckweed	*Lemna minor*	OBL
Indian hemp	*Apocynum cannabinum*	FAC
Purple loosestrife	*Lythrum salicaria*	OBL
Small water plantain	*Alisma subcordatum*	OBL
Marsh skullcap	*Scutellaria galericulata*	OBL
Green ash	*Fraxinus pennsylvanica*	FAC
Sandbar willow	*Salix exigua*	FACW+
Cottonwood	*Populus deltoids*	FAC

Threatened, Endangered, or Candidate Species Documented *NEAR* Minot AFB

Common Name	Scientific Name	Federal Status
Whooping crane	*Grus americana*	Endangered
Piping plover	*Charadrius melodus*	Threatened
Dakota skipper	*Hesperia dacotae*	Threatened
Northern long-eared bat	*Myotis septentrionalis*	Threatened
Rufa red knot	*Calidris canutus rufa*	Threatened

Big Game Species Documented on Minot AFB

Common Name	Scientific Name
Moose	*Alces alces*
Mule Deer	*Odocoileus hemionus*
White-tailed deer	*Odocoileus virginianus*

Furbearer Species Documented on Minot AFB

Common Name	Scientific Name
American Badger	*Taxidea taxus*
Coyote	*Canis latrans*
Red Fox	*Vulpes vulpes*
Fisher	*Pekania* pennanti
Raccoon	*Procyon lotor*
Striped skunk	*Mephitis mephitis*
Muskrat	*Ondatra zibethicus*
Long-tailed weasel	*Mustela frenata*
American Mink	*Neovison vison*
American Beaver	*Castor canadensis*

Small Mammal Species Documented on Minot AFB

Common Name	Scientific Name
White-tailed Jackrabbit	*Lepus townsendii*
Northern Flying Squirrel	*Glaucomys sabrinus*
Richardson's Ground Squirrel*	*Urocitellus richardsonii*
13 Lined Ground Squirrels	*Ictidomys tridecemlineatus*
Eastern Gray Squirrel	*Sciurus carolinensis*
Deer Mouse	*Peromyscus maniculatus*
Meadow Vole	*Microtus pennsylvanicus*
Hayden's Shrew	*Sorex haydeni*
Big Brown Bat*	*Eptesicus fuscus*

Silver-haired Bat	*Lasionycteris noctivagans*
Eastern Red Bat	*Lasiurus borealis*
Hoary Bat	*Lasiurus cinereus*
Little Brown Bat *	*Myotis lucifugus*

*State Species of Conservation Priority

Reptile and Amphibian Species Documented on Minot AFB

Common Name	Scientific Name
Plains Garter Snake	*Thamnophis sirtalis*
Northern Leopard Frog	*Danaus plexippus*
Tiger Salamander	*Ambystoma tigrinum*
Great Plains Toad	*Bujo cognatus*

Bird Species Documented on Minot AFB

Ducks, Geese, and Waterfowl
Canada Goose
Tundra Swan
Gadwall
Mallard
Blue-winged Teal
Northern Shoveler
Northern Pintail*
Canvasback
Redhead
Lesser Scaup*
Bufflehead
Hooded Merganser
Ruddy Duck
Common Goldeneye
Common Merganser
Ring-necked Duck
Green Winged Teal
American Widgeon
Ross's Goose
Lesser Snow Goose
Greater White-fronted Goose
Pheasants, Grouse, and Allies
Sharp-tailed Grouse
Wild Turkey
Ring-necked Pheasant
Grey Partridge

Cranes
Sandhill Crane
Gulls and Terns
Franklin's Gull*
Ring-billed Gull
Herring Gull
Black Tern*
Herring Gull
Pelicans
American White Pelican*
Herons, Egrets, and Bitterns
Great Blue Heron
American Bittern*
New World Vultures
Turkey Vulture
Hawks, Eagles, and Kites
Northern Harrier*
Cooper's Hawk
Red-tailed Hawk
Broad-winged Hawk
Rough-legged Hawk
Swainson's Hawk*
Owls
Snowy Owl
Great Horned Owl
Woodpeckers
Northern Flicker

Wrens
House Wren
Thrushes and Allies
Swainson's Thrush
Hermit Thrush
American Robin
Starlings
European Starling
Mockingbirds and Thrashers
Gray Catbird
Brown Thrasher
Waxwings
Cedar Waxwing
Old World Sparrows
House Sparrow
Finches, Euphonias, and Allies
American Goldfinch
House Finch
Longspurs and Snow Buntings
Snow Bunting
New World Sparrows
Chipping Sparrow
Clay Colored Sparrow
Savannah Sparrow
Grasshopper Sparrow*
Song Sparrow
Harris's Sparrow

Grebes
Eared Grebe
Western Grebe
Pied Billed Grebe
Horned Grebe
Cormorants and Sags
Double-crested Cormorant
Pigeons and Doves
Rock Pigeon
Mourning Dove
Rails and Coots
American Coot
Sora
Plovers and Lapwings
Killdeer
Sandpipers and Allies
Lesser Yellowlegs
Solitary Sandpiper
Willet*
Spotted Sandpiper
Upland Sandpiper*
Marbled Godwit*
Wilson's Snipe
Wilson's Phalarope*

Falcons
American Kestrel
Merlin
Peregrine Falcon
Prairie Falcon
Tyrant Flycatchers
Willow Flycatcher
Least Flycatcher
Western Kingbird
Eastern Kingbird
Crows, Jays, and Magpies
American Crow
Blue Jay
Tits, Chickadees, and Titmice
Black-capped Chickadee
Larks
Horned Lark
Swallows
Barn Swallow
Cliff Swallow
Tree Swallow
Kinglets
Golden-crowned Kinglet

White-crowned Sparrow
White-throated Sparrow
Dark-eyed Junco
Troupials and Allies
Bobolink*
Red-winged Blackbird
Western Meadowlark*
Yellow-headed Blackbird
Common Grackle
Brown-headed Cowbird
Baltimore Oriole
Brewer's Blackbird
New World Warblers
Orange-crowned Warbler
Yellow Warbler
Yellow-rumped Warbler
Black and White Warbler
Common Yellowthroat
Cardinals and Allies
Rose-breasted Grosbeak

*State Species of Conservation Priority

Lepidoptera Species Documented on Minot AFB

Butterflies

Common Name	**Scientific Name**
Viceroy	*Basilarchia archippus*
White Admiral	*Basilarchia arthemis*
Common Wood Nymph	*Cercyonis pergala*
Inornate Ringlet	*Coenonympha inornata*
Alfalfa Butterfly	*Colias eurytheme*
Clouded Sulphur	*Colias philodice*
Monarch*	*Danaus plexippus*
Northern Pearly Eye	*Enodia anthedon*
Silver-spotted Skipper	*Epargyreus clarus*
Variegated Fritillary	*Euptoieta Claudia*
Silvery Blue	*Glaucopsyche iygdamus*
Melissa Blue	*Lycaeides melissa*

Common Name	**Scientific Name**
Gray Copper	*Lycaena dione*
Northern Crescent	*Phyciodes cocyta*
Pearl Crescent	*Phyciodes tharos*
Cabbage Butterfly	*Pieris rapae*
Long Dash Skipper	*Polites mystic*
Tawny-edged Skipper	*Polites Themistocles*
Eastern Comma	*Polygonia comma*
Western White	*Pontia occidentalis*
Checkered White	*Pontia protodice*
Eyed Brown	*Satyrodes eurydice*
Red Admiral	*Vanessa atalanta*
Painted Lady	*Vanessa cardui*

Moths

Common Name	Scientific Name
Interrupted Dagger Moth	*Acronicta interrupta*
Lesser Vagabond Sod Webworm	*Agriphila ruricolella*
Vagabond Sod Webworm Moth	*Agriphila vulgivagella*
Venerable Dart Moth	*Agrotis venerabilis*
American Ear Moth	*Amphipoea Americana*
Interoceanic Ear Moth	*Amphipoea interoceanica*
Brown-blotched Amydria Moth	*Amydria effrentella*
Celery Looper Moth	*Anagrapha falcifera*
Nutmeg Moth	*Anarta trifolii*
Puta Sallow Moth	*Anathix puta*
Common Gray Moth	*Anavitrinella pampinaria*
Sugarbeet Crown Borer	*Ancylosis undulatella*
Yellow-headed Cutworm Moth	*Apamea amputatrix*
Glassy Cutworm Moth	*Apamea devastator*
Doubtful Apamea Moth	*Apamea dubitans*
Wood-colored Apamea Moth	*Apamea lignicolora*
Snowy-veined Apamea Moth	*Apamea niveivenosa*
Bordered Apamea Moth	*Apamea sordens*
Airy Apamea Moth	*Apamea vultuosa*
Fruit-tree Leafroller Moth	*Archips argyrospila*
Alfalfa Looper Moth	*Autographa californica*
Common Looper Moth	*Autographa precationis*
Bent-winged Owlet Moth	*Bleptina caradrinalis*
	Bryotropha plantariella
Vestal Moth	*Cabera variolaria*
Clover Looper Moth	*Caenurgina crassiuscula*
Forage Looper Moth	*Caenurgina erechtea*
Oblong Sedge Borer Moth	*Capsula oblonga*
Civil Rustic Moth	*Caradrina montana*
Sweetheart Underwing	*Catocala amatrix*
Pink Underwing	*Catocala concumbens*
Meske's Underwing Moth	*Catocala meskei*
Mother Underwing Moth	*Catocala parta*
White Underwing	*Catocala relicta*
Celypha Moth	*Celypha cespitana*

Common Name	Scientific Name
	Lacinipolia sareta
Double Lobed Moth	*Lateroligia ophiogramma*
Two-lined Wainscot	*Leucania commoides*
Heterodox Wainscot Moth	*Leucania insueta*
Many-lined Wainscot	*Leucania multilinea*
Phragmites Wainscot Moth	*Leucania phragmatidicola*
False Wainscot	*Leucania pseudargyria*
Marbled-green Leuconycta Moth	*Leuconycta lepidula*
Double-lined Prominent Moth	*Lochmaeus bilineata*
Alfalfa Webworm Moth	*Loxostege cereralis*
Beet Webworm Moth	*Loxostege sticticalis*
Bog Lygropia Moth	*Lygropia rivulalis*
	Macaria amboflava
Slant-lined Owlet Moth	*Macrochilo absorptalis*
Western Tent Caterpillar	*Malacosoma californicum*
Forest Tent Caterpillar	*Malacosoma disstria*
Black-dotted Glyph	*Maliattha synochitis*
Bertha Armyworm Moth	*Mamestra configurata*
Zebra Caterpillar Moth	*Melanchra picta*
Merry Melipotis Moth	*Melipotis jucunda*
Lesser Aspen Webworm Moth	*Meroptera pravella*
	Myelopsis minutularia
Lesser Wainscot Moth	*Mythimna oxygala*
Armyworm Moth	*Mythimna unipuncta*
Horned Spanworm Moth	*Nematocampa resistaria*
Mottled Grass-veneer Moth	*Neodactria luteolella*
Connected Brocade	*Neoligia subjuncta*
Bronzed Cutworm	*Nephelodes minians*
Large Yellow Underwing	*Noctua pronuba*
Lucerne Moth	*Nomophila nearctica*
Willow Beauty	*Nycterosea obstipata*
Cynical Quaker	*Orthodes cynica*
Rustic Quaker	*Orthodes majuscula*
Dusky Leafroller Moth	*Orthotaenia undulana*
European Corn Borer	*Ostrinia nubilalis*

Waved Sphinx	*Ceratomia undulosa*
Blackberry Looper Moth	*Chlorochlamys chloroleucaria*
Oblique-banded Leafroller Moth	*Choristoneaura rosaceana*
Topiary Grass-Veneer	*Chrysoteuchia topiarius*
Morbid Owlet	*Chytolita morbidalis*
Yellow-collared Scape Moth	*Cisseps fulvicollis*
White Triangle Tortrix	*Clepsis persicana*
Bent-line Carpet Moth	*Costaconvexa centrostigaria*
Pale Lichen Moth	*Crambidia pallida*
Leach's Grass-Veneer	*Crambus leachellus*
Inlaid Grass-Veneer	*Crambus pascuellus*
Yellow Satin Veneer	*Crambus perlellus*
Common Grass-Veneer	*Crambus praefectellus*
Virginia Ctenucha	*Ctenucha virginica*
Delicate Cycnia Moth	*Cycnia tenera*
Wheathead Armyworm Moth	*Dargida diffusa*
Yellow-lined Angle	*Digrammia mellistrigata*
Cranberry Spanworm Moth	*Ematurga amitaria*
	Endothenia nubilana
Maple Spanworm Moth	*Ennomos magnaria*
Saw-Wing	*Euchlaena serrata*
	Eucosma ornatula
Striated Eucosma	*Eucosma striatana*
Wormwood Pug	*Eupithecia absinthiata*
White-striped Dart Moth	*Euxoa albipennis*
Army Cutworm	*Euxoa auxiliaris*
	Euxoa declarata
Divergent Dart Moth	*Euxoa divergens*
Reaper Dart Moth	*Euxoa messoria*
Tessellate Dart Moth	*Euxoa tessellate*
	Euxoa velleripennis
Master’s Dart Moth	*Feltia herilis*
Dingy Cutworm	*Feltia jaculifera*
Subgothic Dart	*Feltia subgothica*
Changeable Grass-Veneer	*Fissicrambus mutabilis*
Mint Root Borer Moth	*Fumibotys fumalis*
Common Gluphisia	*Gluphisia septentrionis*
Phyllira Tiger Moth	*Grammia phyllira*

Smartweed Borer Moth	*Ostrinia obumbratalis*
American Lotus Borer Moth	*Ostrinia penitalis*
Splendid Palpita Moth	*Palpita magniferalis*
Northern Burdock Borer Moth	*Papaipema arctivorens*
	Parabagrotis exsertistigma
Labrador Dart Moth	*Paradiarsia littoralis*
Suspected Moth	*Parastichtis suspecta*
Sod Webworm Moth	*Pediasia trisecta*
	Pelochrista agricolana
	Pelochrista matutina
Snakeweed Borer	*Pelochrista ridingsana*
Variegated Cutworm	*Peridroma saucia*
Honest Pero Moth	*Pero honestaria*
Morrison's Pero Moth	*Pero morrisonaria*
Dark-banded Owlet	*Phalaenophana pyramusalis*
Dark Phalenostola Moth	*Phalaenostola eumelusalis*
Narrow-winged Borer	*Photedes defectans*
Ruby Tiger	*Phragmatobia fuliginosa*
	Phtheochroa baracana
	Phtheochroa villana
Snout Moth	*Pima boisduvaliella*
Tufted Apple Budmoth	*Platynota idaeusalis*
Connected Looper Moth	*Plusia contexta*
Cloudy Arches Moth	*Polia imbrifera*
Maple Twig Borer Moth	*Proteoteras aesculana*
Brown-collared Dart	*Protolampra brunneicollis*
Ruddy Quaker Moth	*Protorthodes oviduca*
Miranda Moth	*Proxenus miranda*
Pink-barred Lithacodia Moth	*Pseudeustrotia carneola*
Morrison’s Sooty Dart Moth	*Pseudohermonassa tenuicula*
Poplar Leafroller Moth	*Pseudosciaphila duplex*
Isabella Tiger Moth	*Pyrrharctia isabella*
Dock Rustic Moth	*Resapamea passer*
Four-lined Borer Moth	*Resapamea stipata*
Spotted Grass Moth	*Rivula propinqualis*
Dogbane Saucrobotys Moth	*Saucrobotys futilalis*
Arcigera Flower Moth	*Schinia arcigera*
Bina Flower Moth	*Schinia bina*

Little Virgin Tiger Moth	*Grammia virguncula*
Chickweed Geometer	*Haematopis grataria*
Acesias Buff Gem	*Heliothis acesia*
Dark Spotted Straw Moth	*Heliothis phloxiphagus*
Kidney-spotted Rustic Moth	*Helotropha reniformis*
False Rosy Rustic Moth	*Hydraecia perobliqua*
Spurge Hawk-moth	*Hyles euphorbiae*
	Hypena atomaria
Green Cloverworm Moth	*Hypena scabra*
Painted Lichen Moth	*Hypoprepia fucosa*
Common Hyppa Moth	*Hyppa xylinoides*
Common Idia Moth	*Idia aemula*
Even-lined Sallow	*Ipimorpha pleonectusa*
Atlantic Arches Moth	*Lacanobia atlantica*
Bridled Arches Moth	*Lacinipolia lorea*
	Lacinipolia lustralis
Thinker Moth	*Lacinipolia meditata*
Olive Arches Moth	*Lacinipolia olivacea*
Bristly Cutworm Moth	*Lacinipolia renigera*

Double-striped Scoparia Moth	*Scoparia biplagialis*
Soft-lined Wave Moth	*Scopula inductata*
Four-Lined Wave Moth	*Scopula quadrilineata*
Dimorphic Sitochroa Moth	*Sitochroa chortalis*
	Spaelotis bicava
Clandestine Dart	*Spaelotis clandestina*
	Speranza amboflava
Virginian Tiger Moth	*Spilosoma virginica*
Bicolored Sallow	*Sunira bicolorago*
Brown Sallow	*Sympistis stabilis*
Woolly Grass-veneer Moth	*Thaumatopsis pexellus*
	Trachea delicata
Celery Leaftier Moth	*Udea rubigalis*
Lesser Black-letter Dart Moth	*Xestia c-nigrum*
Greater black-letter dart	*Xestia dolosa*
Norman’s Dart	*Xestia normaniana*
Smith’s Dart Moth	*Xestia smithii*
Wavy-lined Fan-Foot	*Zanclognatha jacchusalis*

STATEMENT OF WORK
UNITED STATES FISH AND WILDLIFE SERVICE
CONSERVATION OF NATURAL RESOURCES ON
MINOT AIR FORCE BASE, NORTH DAKOTA
MAY 2017

1.0. DESCRIPTION OF SUPPORT

This Statement of Work (SOW) decribes on-site, inherently governmental staff support performed by the U.S. Fish and Wildlife Service (FWS) to support Minot Air Force Base (AFB), North Dakota mission(s) by providing for the conservation and rehabilitation of natural resources on the installation while sustaining military readiness. The FWS will designate a liaison (e.g., "liaison" or other staff, reference list below) to provide technical, managerial, and adaptive analysis services to Minot AFB for the execution and oversight of environmental programs for compliance with the Endangered Species Act (ESA), Sikes Act, Migratory Bird Treaty Act (MBTA), National Environmental Policy Act (NEPA), Bald and Golden Eagle Protection Act (BGEPA) and other authorities as indicated in the *Interagency Assistance Agreement between the United States Fish and Wildlife Service, and the United States Air Force for the Conservation of Natural Resources on Air Force Controlled Lands* (IA). The FWS liaison will work in collaboration with Minot AFB to protect and enhance biodiversity and ecosystem integrity on lands under the control of the U.S. Air Force (AF) consistant with the installation mission.

The level of FWS staff support provided to Minot AFB is:

- Part-Time Liaison

  FWS employee who is part-time FTE, embedded, but not always, with the AF Natural Resources Program at an installation, or combination of installations, and is funded from a single line item in the AF annual budget (projects funded in prior years and programmed for CY +2 are detailed in Addendum to this SOW). The total funded level of effort is less than a full FTE. The liaison meets the AF's need for sufficient numbers of professionally trained natural resources management personnel, per the Sikes Act and AFI and DODI policies. The liaison functions as an agent of the federal government working in the best interest of AF for decision-making in natural resource management. This situation is appropriate when there are no qualified installation personnel and there are significant natural resources present, or when the resources exceed the ability of the existing installation personnel in accomplishing necessary management actions. It's mutually agreed this level of effort is required to meet installation natural resource management requirements. The liaison IS NOT considered the Installation Natural Resources Manager. The liaison may support multiple installations.

- Professional Field Staff
  - FWS employees who communicate with FWS liaisons, SPOCs, and AF installation personnel regarding execution of natural resource projects and requests for access to an installation. Specific activities, actions and expectations will vary, and will be negotiated depending on the specific project requirements, installation personnel, and installation security and access requirements (projects funded in prior years and programmed for CY +2 are detailed in Addendum to this SOW).

- Pathways Staff
  - FWS Pathways Internship Program (Pathways) interns may provide project specific assistance to the installation's Natural Resource Program. Pathways is designed to provide students enrolled from high school through graduate level with opportunities to work in the FWS while still in school and while getting paid for the work performed. Students who successfully complete Pathways may be eligible for conversion to a permanent job in the FWS or other federal agencies (e.g, AF). Pathways interns are supervised and managed by FWS employees, with the expectation they communicate with installation resources as appropriate.

Responsibilities of the FWS employee(s) may include:

1.1. ESA Compliance. The FWS liaison will provide technical assistance to Minot AFB for the conservation, protection and management of species listed for protection under the auspices of the ESA (16 USC § 1531-1544). Major activities and projects supported may include designing and implementing species inventories, population monitoring, habitat mapping, and ESA compliance activities such as: preparation of biological assessments, assistance for implementing conservation requirements (i.e. "Reasonable and Prudent" conservation measures) stipulated in a biological opinion, and NEPA support for activities that may affect FWS trust species. Responsibilities will also include determining applicability and implementation of new, emerging, proposed, and final legislation, and regulations and rulings as they apply to Minot AFB. Frequent contacts will be made to the appropriate FWS office and other related agencies to consult on proposed Minot AFB projects and for information on a sensitive species and habitats of importance.

1.3. Sikes Act Compliance. The FWS liaison will support Minot AFB with compliance with the Sikes Act as specified in Title 16 U.S.C. § 670a(d)(2) for the implementation of the Integrated Natural Resources Management Plan (INRMP). In order to satisfy the Minot AFB requirement to provide professionally trained natural resources management personnel, as defined in DoDI 4715.03, Encl. 2, 3.b. and AFI32-7064, 3.9, the FWS liaison must possess a degree in natural sciences.

The FWS liaison will conduct the annual INRMP review, coordination, and update. The FWS liaison will maintain compliance with current INRMP formatting

requirements. The FWS liaison will facilitate tri-partite signature to maintain operation and effect of the INRMP no less than every five years.

An annual review will be conducted in coordination with internal stakeholders and local representatives of the USFWS and state fish and wildlife agency. Document findings of the annual review in an Annual INRMP Review Summary. Obtain concurrence signatures from collaborating agency representatives to assert INRMP is operational and effective. Identify appropriate projects for INRMP implementation in an annual work plan. Seek interest from Federal and state fish and wildlife agencies to perform INRMP projects in workplan. Provide independent government cost estimates assessing potential INRMP project. Identify options and pursue additional funding sources. Assist as necessary with provision of quality control/quality assurance review and oversight services for projects accomplished by others. Manage natural resources permit programs to include consumptive use and non-consumptive use permits. Monitor agricultural outleases and forestry programs in coordination with real property offices.

The FWS employee(s) will support initiatives for the conservation, protection and management of all fish and wildlife resources on Minot AFB. Major activities and projects supported include fish and wildlife surveys, population monitoring, habitat mapping, strategic habitat, climate change, invasive species control and management, and NEPA support for activities that may affect fish and wildlife resources. Additionally, the employee(s) will support the evaluation of dispersed outdoor recreation potential; as well as management of this program and, as applicable, the reimbursable conservation funds earned.

The FWS Liaison will assist with the development and facilitation of local partnerships for conservation initiatives that support FWS initiatives and Minot AFB mission objectives. Support may also include providing expertise in evaluating the conservation benefits of lands adjacent to the installation that are being considered for acquisition of easement under the Department of Defense Readiness and Environmental Protection Initiative (REPI).

1.4. Migratory Bird Conservation. The FWS liaison will support Minot AFB compliance with the MBTA Executive Order No. 1386, *Responsibilities of Federal Agencies to Protect Migratory Birds*, January 10, 2001, the FWS – DoD MOU for *Migratory Bird Conservation on DoD Lands*, July, 2006, and the FWS Final Rule for *Migratory Bird Permits: Take of Migratory Birds by the Armed Forces*, February, 2007. The FWS liaison will communicate with installation Flight Safety personnel to become familiar with Bird/Wildlife Aircraft Strike Hazard (BASH) issues and identify natural resources management activities that will support BASH reduction objectives.

The liaison will participate in meetings and workgroups regarding BASH program implementation. The employees will assist with formal wildlife surveys to identify migratory bird habitat incompatible with the mission, provide management recommendations to reduce mission impacts from migratory birds, and provide

recommendations for appropriate levels of removal, harassment, and depredation of wildlife.

1.5. Wetlands Protection and Management. In compliance with Executive Order 11990, *Protection of Wetlands*, May 24, 1977, the FWS employee(s) will support Minot AFB initiatives to preserve the natural values of wetlands while carrying out its mission. In accordance with the U.S. Corps of Engineers (COE) 1987 Wetland Delineation Manual, major activities and projects supported include wetland delineation in support of in-house Civil Engineer projects, wetlands evaluation and inventory, NEPA support for activities that may affect wetlands, wetland restoration and management, etc. Assistance may also include facilitating FWS National Wetland Inventory support, determination of wetland habitat values, and contacting the COE to determine jurisdictional authority and other appropriate state and federal agencies for a review of existing data and information, as well as assistance with ensuring the accuracy of Minot AFB geographical information database layers.

1.6. Natural Resources Evaluation and Damage Assessment. The FWS employee(s) will assist Minot AFB with collecting, compiling, analyzing, reporting data using the prescribed methodologies presented in the Department of Interior Natural Resource Damage Assessment (NRDA) Regulations (43 CFR Part 11 or 15 CFR Part 900), with the purpose of supporting NRDA activities or other similar activities. Assistance may include developing plans to mitigate or compensate for natural resource damages.

2.0. STATUTORY AUTHORITY

U.S. Fish and Wildlife Service assistance to the U.S. Air Force for natural resource conservation and planning shall be provided as authorized in the Sikes Act (16 U.S.C. § 670 *et seq.*) and other authorities as per the IA. The scope of this assistance includes, but is not limited to, efforts to support stewardship of natural resources on DoD and non-DoD lands.

3.0. DUTY STATION

The FWS employee providing support to Minot AFB shall conduct work at the following address:

5 CES
Asset Management Flight
445 Peacekeeper Place, BLDG 445
Minot Air Force Base, ND 58705

4.0. MANAGEMENT AND SUPERVISION

The FWS employee(s) providing support to Minot AFB will be under the supervision of the FWS. Workload management and prioritization will be directed or approved by the

Environmental Management Element Chief. The FWS employees' supervisor and the Environmental Management Element Chief will collaborate and coordinate to plan, guide, and direct training, development, and travel requirements of the FWS employee(s). The installation point of contact is:

Mr. Michael Getty
Chief, Environmental Management Element
5 CES/CEIE
Minot Air Force Base, ND 58705

Additionally, the FWS employee providing support to Minot AFB will collaborate and coordinate with the installation support team (IST) media manager for natural resources. The IST point of contact is:

Mr. Zach Rigg
Natural Resources Media Manager
AFCEC/CZOM
Offutt Air Force Base, NE 68132

5.0. TRAVEL

In accordance with the basic IA, AFCEC will provide necessary TDY funding for any mutually agreed temporary duty travel assignments that may be required each fiscal year to attend meetings, training, to further provide assistance in support of Minot AFB. Funding will not be provided for training to obtain professional certification or credentials. Required travel will be identified to the greatest extent possible prior to the beginning of each fiscal year.

6.0. AIR FORCE FURNISHED SUPPORT

Minot AFB will provide office space, phones, internet connection, computer access, software, photocopying, printer, fax, and office supplies and other property, equipment and resources necessary to support the FWS employee position. Minot AFB shall also assist FWS employee with attaining the necessary badges or passes for access to military installations and facilities, but cannot guarantee access to any individual who does not meet installation security clearance requirements.

7.0 AVAILABILITY OF FUNDS

To facilitate reimbursement to the FWS for services provided in accordance with the basic IA, this SOW is to be developed and/or reviewed during the annual tripartite INRMP review and update. The AF and FWS will create a multi-year plan of previously funded projects, projects with current year funding projections, projects programmed for current and out-year funding, and projects planned for execution that do not require AF funding with the understanding that funds may not be available during the year of execution. The anticipated FWS work efforts for the upcoming year is identified in the form of a

coordination spreadsheet and the installation will provide the appropriate INRMP fiscal year workplan to ensure partnership effectiveness and team adequacy focus areas. Upon acceptance by the FWS, both the spreadsheet and workplan will be considered addendums to this SOW.

8.0. BILLING AND PAYMENT PROCEDURES

Billing and payment procedures for reimbursable assistance provided in this SOW shall be in accordance with section V, Financial Administration, of the IA. The indirect costs for this SOW will be the current FWS indirect cost rate for personnel that are detailed to other bureaus or agencies, where logistical support is provided by the host agency, and where no additional costs are incurred by the FWS for office space, phones, internet connection, computer access, software, photocopying, printer, fax, and office supplies and other property, equipment and resources necessary to support the FWS employee(s) position.

9.0. EFFECTIVE DATE

This SOW becomes effective by signature of authorized representitive from each cooperating agency. This SOW shall be valid until terminated in accordance with Section VI of the basisc IA. This SOW may be modified, revised, or renewed at any time, as agreed by the effected parties.

STEVEN KRENTZ Digitally signed by STEVEN KRENTZ Date: 2017.08.16 18:05:09 -05'00'

Steven Krentz
Project Leader, Missouri River Fish and Wildlife Conservation Office
U.S. Fish and Wildlife Service

GETTY.MICHAEL.G.1280618272 Digitally signed by GETTY.MICHAEL.G.1280618272 Date: 2017.08.14 08:16:15 -05'00'

Michael Getty
Chief, Environmental Management Element
Minot Air Force Base
U.S. Air Force

- Agricultural Outgrant Area Map

USAF-AFGSC-QJVF-15-2-0513

EXHIBIT A1 &2

MAP OF LEASED PREMISES

15.0 ASSOCIATED PLANS

Tab 1 – Wildland Fire Management Plan

N/A

Tab 2 – Bird/Wildlife Aircraft Strike Hazard (BASH) Plan

Tab 3 – Golf Environmental Management (GEM) Plan

Tab 4 – Integrated Cultural Resources Management Plan (ICRMP)

Tab 5 – Integrated Pest Management Plan (IPMP)