U. S. AIR FORCE INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

Peterson 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 U.S. Air Force's (AF) standardized Integrated Natural Resources Management Plan (INRMP) template. This INRMP has been developed in cooperation with applicable stakeholders, which may include Sikes Act cooperating agencies and/or local equivalents, to document how natural resources will be managed. Non-U.S. territories will comply with applicable Final Governing Standards (FGS). Where applicable, external resources, including Air Force Instructions (AFIs); AF Playbooks; federal, state, local, FGS, biological opinion and permit requirements, are referenced.

Certain sections of this INRMP begin with standardized, AF-wide "common text" language that address AF 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 AF-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 AF environmental Installation Support Teams (ISTs) and/or installation personnel.

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.

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DOCUMENT CONTROL

Record of Review – The INRMP is updated not less than annually, or as changes to natural resource management and conservation practices occur, including those driven by changes in applicable regulations. In accordance with (IAW) the Sikes Act and AFI 32-7064, *Natural Resources Management*, the INRMP is required to be reviewed for operation and effect not less than every five years. Annual reviews and updates are accomplished by the base Natural Resources Manager (NRM), and/or an Installation Support Team 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 NR Media Manager) conducts an annual review of the INRMP in coordination with internal stakeholders and local representatives of the United States Fish and Wildlife Service (USFWS), state fish and wildlife agency, and National Oceanic and Atmospheric Administration (NOAA) Fisheries, where applicable, and accomplishes pertinent updates. Installations will document the findings of the annual review in an Annual INRMP Review Summary. By signature to 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.

INRMP APPROVAL/SIGNATURE PAGES

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN FOR
PETERSON AIR FORCE BASE

This Integrated Natural Resources Management Plan (INRMP) for the Peterson Air Force Base, Colorado, meets the requirements of the Sikes Act (16 U.S.C. 670a et seq.) as amended and has been prepared in accordance with regulations, standards, and procedures of the Department of Defense and the United States Air Force. To the extent resources permit, the United States Air Force Academy will implement the actions associated with this plan and will strive to meet its goals and objectives.

Statement of Operation and Effect:

By their signatures below, all parties grant their concurrence and acceptance, having reviewed this plan, and agree that its goals and objectives contribute to the regional conservation and management of wildlife, forests, rare species, aquatic and terrestrial habitats, and wildland fuel hazards; and provide outdoor recreation opportunities.

11/14/19

FOR NOREEN WALSH
Director, Region 6
U.S. Fish and Wildlife Service

Date

12/11/19

BRETT ACKERMAN
Southeast Region Manager, Colorado Parks & Wildlife

Date

1/10/20

THOMAS G. FALZARANO, Colonel, USAF
Commander, 21ST Space Wing

Date

EXECUTIVE SUMMARY

This Integrated Natural Resources Management Plan (INRMP) outlines a long-term plan to manage natural resources in compliance with relevant federal statutes, Executive Orders, regulations, and Department of Defense (DoD) and Air Force-specific requirements, while supporting the Air Force mission on Peterson Air Force Base (AFB). This INRMP serves as the Wing Commander's decision document for natural resources management actions and associated compliance procedures. The INRMP integrates the base's natural resources management program with ongoing mission activities to conserve and protect natural resources in support of the military mission for present and future generations.

Peterson AFB is committed to a proactive management strategy focused on an ecosystem-based approach to natural resources management, including the protection and conservation of wildlife, habitat, and the surrounding watershed. The INRMP outlines a plan to implement this strategy by identifying: (1) the military mission and its potential effects on natural resources, (2) baseline information on the biotic and abiotic natural environment, (3) recommended goals, objectives, and projects for key natural resource management areas, (4) personnel, funding, and other necessary support required for implementation of the INRMP and the recommended projects, and (5) opportunities for consultation with stakeholders in the implementation process.

Key natural resource management issues at Peterson AFB include deterrence of black-tailed prairie dogs (*Cynomys ludovicianus*) from moving onto developed and otherwise sensitive areas of the base, and control of noxious weeds. Management goals and objectives to address these issues were defined based upon regulatory requirements and projected trends. Projects are identified that link directly to both a management objective and a regulatory driver. Implementation of the objectives and achievement of the goals described herein will not appreciably affect the Peterson AFB mission, but rather will maintain safety measures already established relating to Bird/Wildlife Aircraft Strike Hazard (BASH) issues and continue sustainment of native ecosystems as much as feasible.

The goals of the Peterson AFB Natural Resources Management Program, as outlined in this INRMP, are as follow:

Goal 1: Control native and non-native invasive species.

Goal 2: Protect Peterson AFB's natural resources.

Implementation of the above goals will constitute a continuation of the resource management goals and strategies in past years.

This INRMP details the steps needed to fulfill all compliance requirements related to natural resources and to provide for environmental stewardship at Peterson AFB. Full compliance and sound stewardship are dependent on implementation of the INRMP through the appropriation of funds for the recommended projects summarized in this plan. Annual reviews of the document, with first internal organizations and then the U.S. Fish and Wildlife Service (USFWS) and Colorado Parks and Wildlife (CPW), will ensure that the INRMP remains current and relevant. This INRMP was developed in 2014 and will be updated annually.

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 United States Air Force. 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 Air Force adaptability in all environments. The Air Force has stewardship responsibility over 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 Air Force natural resources program is to sustain, restore and modernize natural infrastructure to ensure operational capability and no net loss in the capability of AF 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 INRMP focuses on all aspects of natural resource management on Peterson AFB. The Sikes Act of 1960 (16 USC 670a-670o, as amended) provides for cooperation among the Departments of the Interior and Defense and respective state agencies concerning the conservation, protection, and management of natural resources on military installations throughout the United States. The Sikes Act requires the Secretary of each military department to use trained professionals to manage these natural resources. As the principle steward of the land, Peterson AFB has a responsibility to protect and enhance the natural resources found on the installation.

The INRMP is a road map for the protection of natural resources based on an interdisciplinary approach to ecosystem management. This approach requires that all organizations whose functions and practices may adversely affect the installation's ecosystem be aware of their potential impacts and comply with the guidelines established in this plan.

In general, ecosystem management focuses on the interrelationships of ecological processes that link climate, topography, water, minerals, soils, plants, and animals. These links create an ecosystem that, in the case of Peterson AFB, was altered by many land use changes over the years. The prairie ecosystem that historically existed at the installation's location has been disturbed by various uses including cattle grazing, agriculture, and urban development.

1.2 Management Philosophy

The natural resources on Peterson AFB will be managed through implementation of ecosystem management strategies, with the ultimate goal of supporting the Air Force mission on the base. Compliance with federal statutes and regulations, Executive Orders, and DoD and Air Force regulations relating to natural resource issues will ensure that operations on the installation continue unimpeded by regulatory entanglements. However, the INRMP is also developed to ensure there is limited or no impact on Peterson AFB's mission from natural resources themselves.

In accordance with the Sikes Act, this INRMP was developed in coordination with the USFWS and CPW. The plan has also been staffed through interagency and organization stakeholders in the review and coordination process.

Within the parameters of mission support, the policies and strategies integral to an ecosystem management philosophy will be pursued. Sustainable native species populations and communities will be selected when practical while noxious, invasive species will be subject to control measures. Wildlife conflicts will be addressed in the most feasible manner possible from the perspective of mission support and human health and safety.

1.3 Authority

The following federal, DoD, Air Force, and state regulations, directives, and instructions are cited as authorities for this plan:

- Sikes Act of 1960, as amended (16 U.S.C. 670 *et seq*.)
- Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e)
- Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543)
- Migratory Bird Treaty Act, as amended (16 U.S.C. 701 *et seq*.)
- Economy Act of 1932, as amended (31 U.S.C. 1535)
- Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668d)
- Federal Noxious Weed Act of 1976 (7 U.S.C. 2801)
- Executive Order 13352, Facilitation of Cooperative Conservation; August 26, 2004
- Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds; January 10, 2001
- Executive Order 13112, Invasive Species; February 3, 1999
- DoD Directive 4715.21, Climate Change Adaptation and Resilience; January 14, 2016
- DoD Instruction 4715.03, Natural Resources Conservation Program; March 18, 2011
- DoD Manual 4715.03, Integrated Natural Resources Management Plan (INRMP) Implementation Manual; November 25, 2013
- DoD Memorandum, Sikes Act Implementing Procedures – Clarifying the Role of the U.S. Fish and Wildlife Service (USFWS) and State Agencies; June 20, 2014
- Department of Defense (DoD) Policy to Use Pollinator-Friendly Management Prescriptions; September 5, 2014
- AFI 32-7064, Integrated Natural Resources Management; November 18, 2014
- AFI 32-1053, Integrated Pest Management Program; November 20, 2014
- Memorandum of Understanding Between the U.S. Department of Defense and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds; September 5, 2014
- Memorandum of Understanding between the Department of Defense and the Pollinator Partnership; February 9, 2015
- Colorado Noxious Weed Act, Colorado Revised Statute (CRS) Title 35 Article 5.5-10

This INRMP complies with AFI 32–7064 and, therefore, is in compliance with all federal statutes and Executive Orders. Should conditions change on Peterson AFB with regard to the pertinence of some regulations, the Peterson AFB Natural Resources Manager (NRM) will consult AFI 32–7064 for guidance.

Installation-Specific Policies (including State and/or Local Laws and Regulations)	

1.4 Integration with Other Plans

Installation Development Plan

This INRMP is integrated with the Installation Development Plan (IDP) primarily along two lines of support: compliance and logistics. The INRMP identifies federal, state, and local rules and regulations that deal with natural resource issues, and addresses methods for supporting the mission while at the same time protecting the resources. For example, the Migratory Bird Treaty Act provides for the safety of migratory birds, and prohibits the take, or destruction, of birds and their active nests without a permit. If an operation on Peterson AFB were to threaten the safety of birds and/or bird nests, recommendations would be made to adjust the timing or location of the operation to protect the birds. If the operation is deemed mission essential and, consequently, puts the birds' safety in jeopardy, the INRMP allows for seeking a Migratory Bird Depredation Permit from the USFWS Migratory Bird Permit Office to undertake the mission through a process designed, in cooperation with the USFWS, to minimize impacts to migratory birds in association with proposed activities on Peterson AFB (see U.S. Fish and Wildlife Service 2011).

Bird Airstrike Hazard Plan

The BASH Plan and the INRMP work together to ensure the safety of military and civilian aircraft using both Peterson AFB and Colorado Springs Airport runways and airspace. The INRMP allows for the monitoring of birds in the flight line areas. It supports the removal of prairie dogs in areas where they may serve as attractants to raptor species. And finally, as a last resort, the INRMP supports lethal control of prairie dogs, other mammalian species, and birds when their presence threatens aircraft and human safety. Disturbance and lethal control of migratory birds can only be undertaken by a depredation permit issued by the USFWS Migratory Bird Permit Office.

Integrated Pest Management Plan

The INRMP and the Integrated Pest Management Plan (IPMP) are closely tied to one another through the management of pest species. The INRMP promotes the implementation of the IPMP as a means of achieving native ecosystem management goals and objectives. Invasive non-native species threaten native habitats and can cause human health and safety issues as well.

2.0 INSTALLATION PROFILE

Office of Primary Responsibility	The Chief of Installation Management Flight, 21 CES 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/POC	David Kelley (719) 556-1433 david.kelley.25@us.af.mil
State and/or local regulatory POCs (For US-bases, include agency name for Sikes Act cooperating agencies)	Colorado Parks and Wildlife
Total acreage managed by installation	1,386
Total acreage of wetlands	<1 acre
Total acreage of forested land	<1 acre (urban)
Does installation have any Biological Opinions? (If yes, list title and date, and identify where they are maintained)	No
NR 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)	☑ Invasive species ☑ Wetlands Protection Program ☑ Grounds Maintenance Contract/SOW ☐ Forest Management Program ☐ Wildland Fire Management Program ☐ Agricultural Outleasing Program ☑ Integrated Pest Management Program ☑ Bird/Wildlife Aircraft Strike Hazard (BASH) Program ☐ Coastal Zones/Marine Resources Management Program ☑ Cultural Resources Management Program

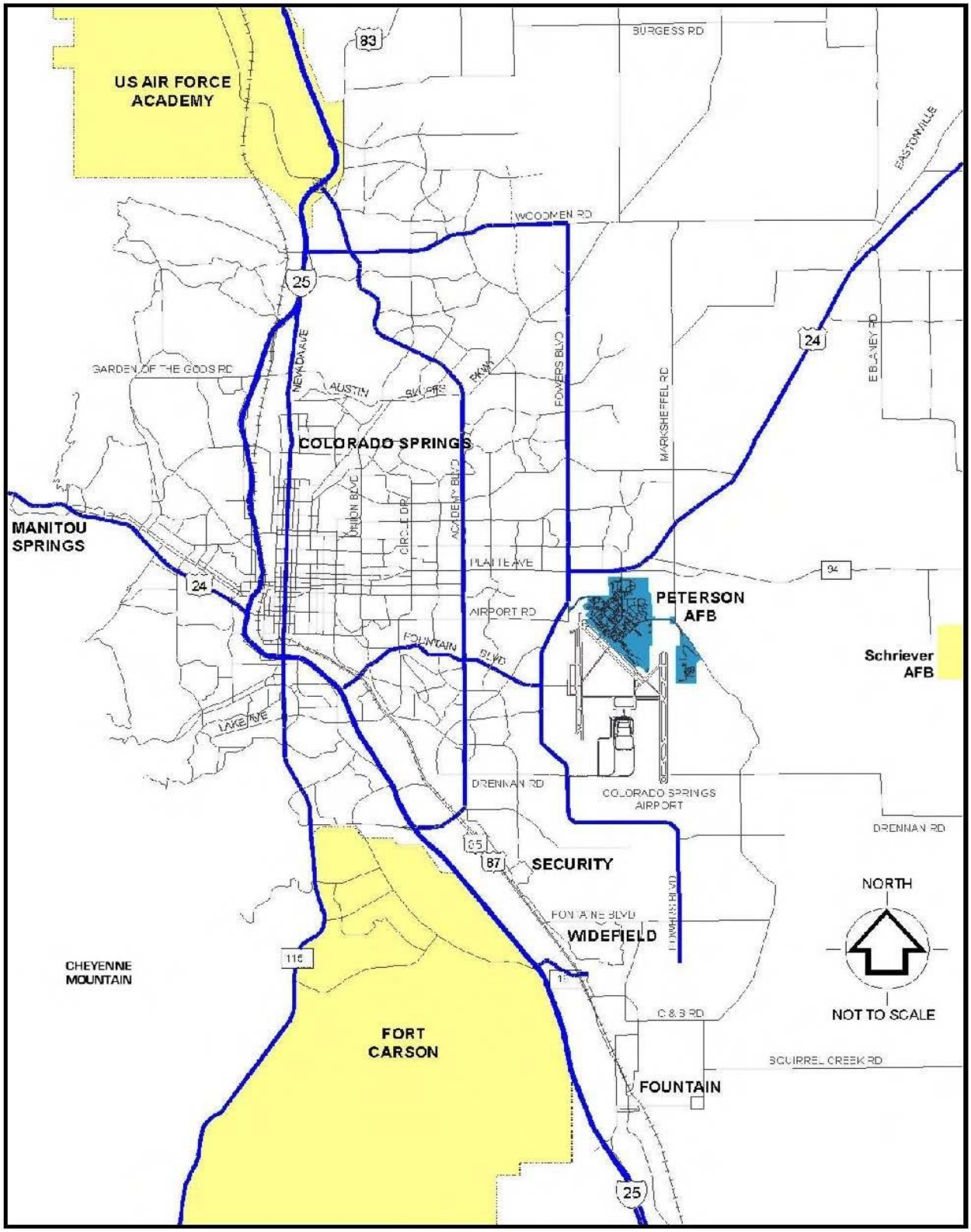
2.1 Installation Overview

2.1.1 Location and Area

Peterson AFB is located just east of the Rocky Mountain Front Range in El Paso County, Colorado, approximately seven miles east of downtown Colorado Springs (Figure: Vicinity Map). The greater metropolitan Colorado Springs area (including suburbs within 15 miles of downtown) hosts high technology businesses and several military installations.

Other major military installations in the area include the U.S. Air Force Academy, U.S. Army Fort Carson, Schriever AFB, and Cheyenne Mountain Air Force Station. Denver, Colorado is approximately 68 miles north of Colorado Springs, and Pueblo, Colorado is about 44 miles south.

Peterson AFB is bordered on the north by U.S. Highway 24 and Colorado State Highway 94, on the east by Marksheffel Road, on the south and west by the Colorado Springs Airport, and on the northwest by private property. The city of Colorado Springs owns the airfield and runways, while Peterson AFB controls its immediate taxiways and aprons.



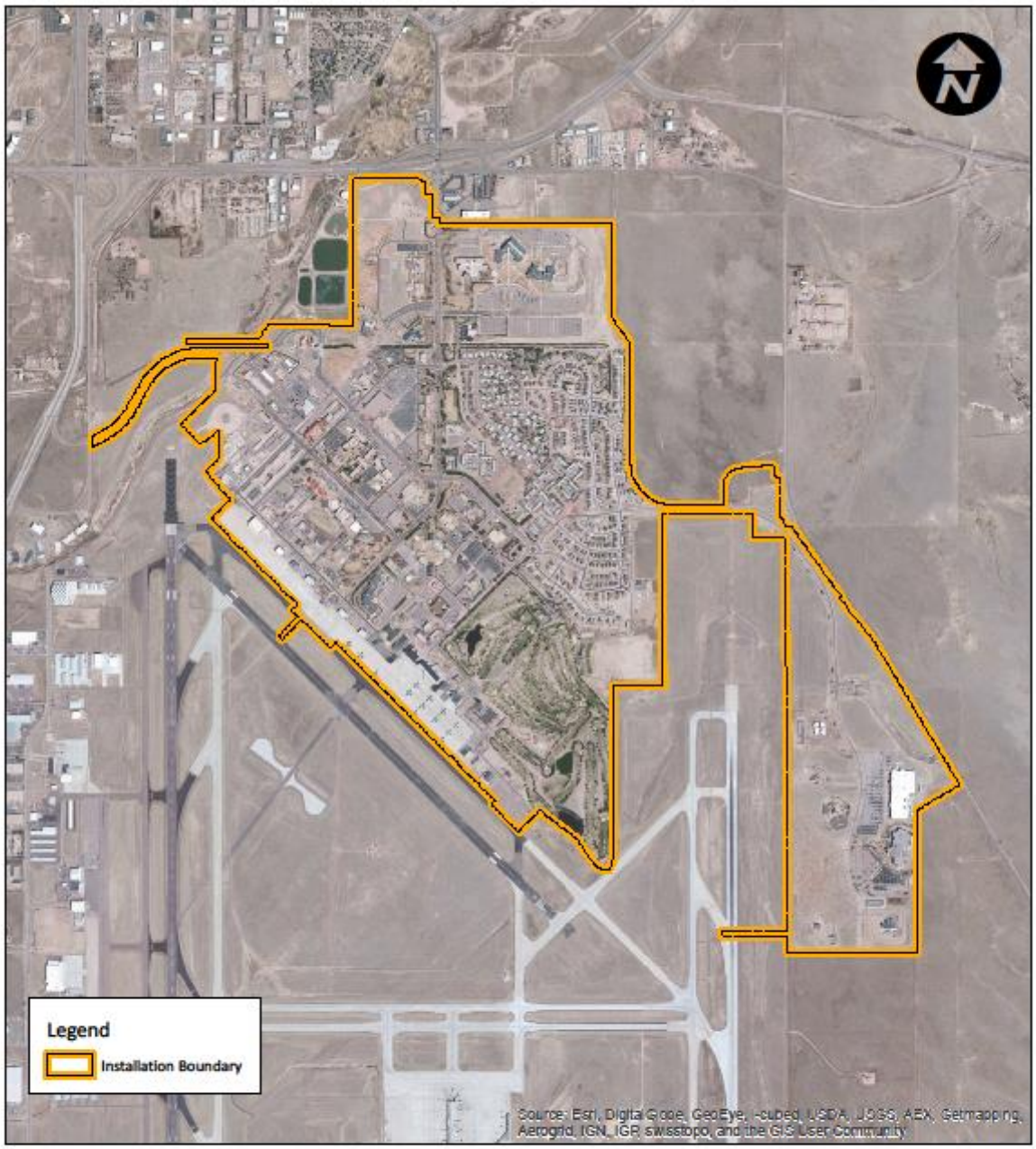
Vicinity Map

Peterson AFB consists of approximately 1,386 acres, of which about 200 acres are owned by DoD and approximately 1,186 acres are leased from Colorado Springs. The Peterson AFB holdings are divided into two parcels, Peterson Main and Peterson East, which are separated by Colorado Springs Airport's easternmost runway. The developed cantonment area, known as Peterson Main, consists of approximately 1,112 acres. Peterson East consists of approximately 274 acres, including the access corridor. (Acreages determined by Air Force Civil Engineer Center [AFCEC] Installation Support Team [IST] GIS interpretation.) A general map of Peterson AFB can be found at Figure: Peterson Air Force Base.

Peterson AFB has recently acquired through lease the area above the Peterson East parcel, to be referred to as Peterson East Extension; see following Figure. The area is slated for development as a parking area for administrative employees. The Peterson East Extension area acreage is not included in the acreage figures above.

The 21st Space Wing (21 SW) has management responsibility for several geographically separated units (GSUs) through their Base Operations and Maintenance Service Contracts. These contracts include requirements for the preparation of INRMPs by the GSUs when necessary.

There are 936 buildings on Peterson AFB, of which 669 are privatized housing units belonging to Tierra Vista Community (TVC). The privatized housing is on 216 acres subleased by TVC from Peterson AFB.

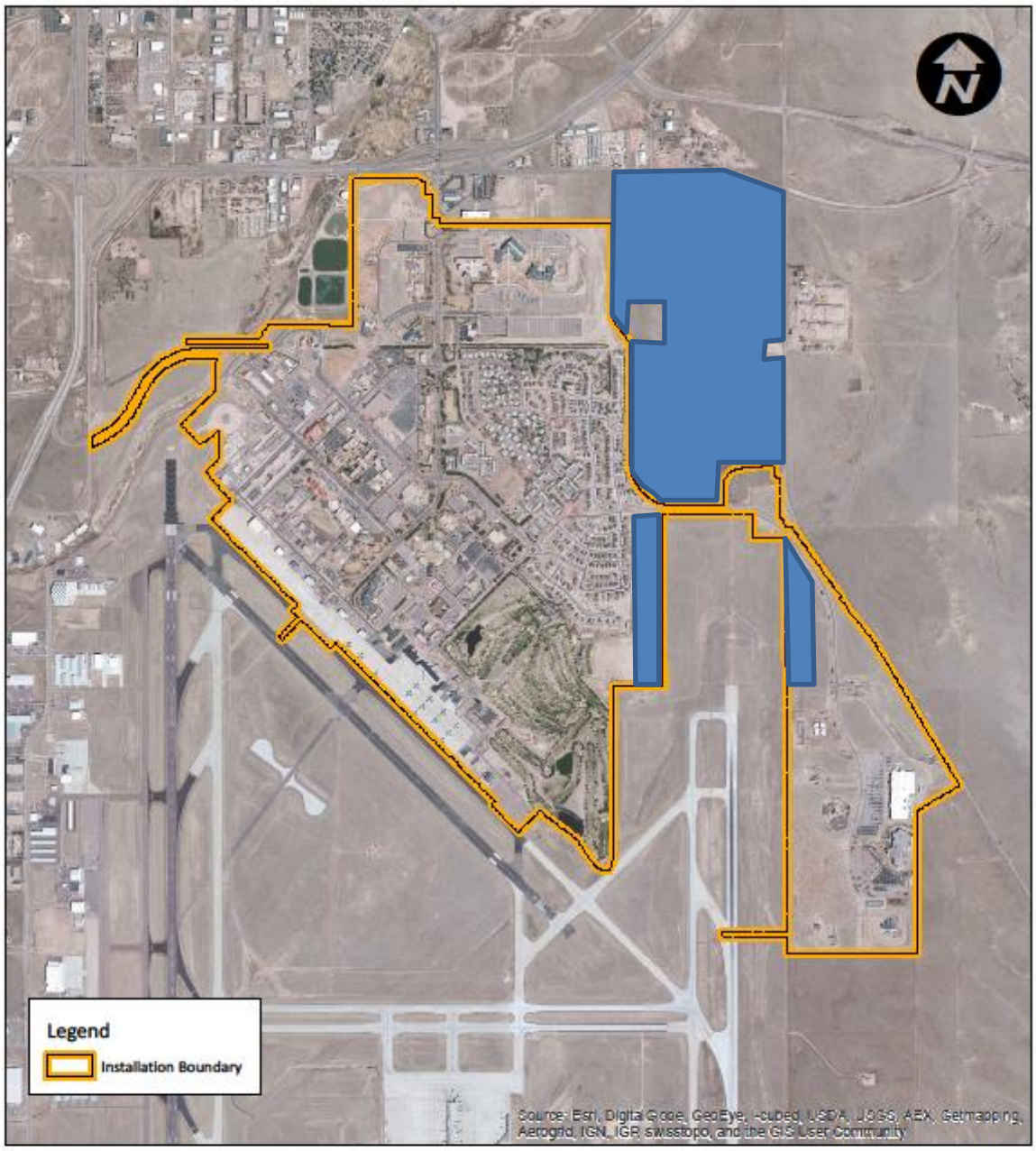


Peterson Air Force Base
PAFB INRMP
PAFB
Figure 3-2

Miles
0.5 0.25 0 0.5
1 0.5 0 1
Kilometers

Center for Environmental Management
MILITARY LANDS

Peterson Air Force Base



Peterson Air Force Base
PAFB INRMP
PAFB
Figure 3-2

Miles
0.5 0.25 0 0.5
1 0.5 0 1
Kilometers

Center for Environmental Management
MILITARY LANDS

Peterson East Extension

Installation/GSU Location and Area Descriptions

Base/GSU Name	Main Use/Mission	Acreage	Addressed in INRMP?	Describe NR Implications
Cape Cod AFS, MA	Missile warning and space surveillance, hosts a Pave PAWS radar.	N/A	Has own INRMP.	No NR implications for PAFB.
Cavalier AFS, ND	Exempt, Cat II, on Grand Forks real property records.	N/A	Referenced in Grand Forks INRMP.	No NR implications for PAFB.
Clear AFS, AK	Missile warning and space surveillance, hosts a Pave PAWS radar.	N/A	Has own INRMP.	No NR implications for PAFB.
San Diego AF Space Surveillance Site, CA	Previously hosted S-band radar array for space surveillance as part of Fence system; now operationally closed.	N/A	Has own INRMP.	No NR implications for PAFB.
Thule AB, Greenland	Missile warning and space control.	N/A	INRMP not required - Final Governing Standards for Greenland are directive for environmental management.	No NR implications for PAFB.

2.1.2 Installation History

The Colorado Springs Airport was established in 1926. During World War II, through a lease with Colorado Springs, the War Department (now the DoD) established the Colorado Springs Army Air Base with its first mission as a Photo Reconnaissance Operational Training Unit (PROTU). The primary aircraft assigned to the installation was the unarmed photo reconnaissance version of the P-38E Lightning. In August, 1942, 1st Lt. Edward J. Peterson, Operations Officer of the 10th Photo Reconnaissance Squadron, was killed in a crash during take-off in a P-38 while on a training mission to Lowry Field near Denver. In December of 1942, the installation was renamed Peterson Army Air Base (aka Peterson Field) in honor of Lt. Peterson.

In 1943, Peterson Field was assigned to the 3rd Air Force with a mission to conduct heavy bomber combat crew training under the 214th Combat Crew Training School. Since then, several assignments and mission changes have occurred, including Fighter Pilot (P-40 Warhawk) training under the 72nd Fighter Wing and assignment to the 2nd Air Force and Continental Air Forces. Under the Continental Air Forces, Peterson Field became an Army Air Forces Instructor's School.

After World War II, the federal government demolished the base surplus facilities and returned the land to the city. In 1948, the federal government negotiated with the city to provide flying facilities at the airport in support of 15th Air Force, which was then headquartered near the downtown area at Ent AFB (now the Olympic Training Center). In 1949, the Air Force placed Peterson Field on inactive status when it moved Headquarters 15th Air Force to March AFB in California.

In 1951, the Air Force reactivated Peterson Field as an off-base support installation for Ent AFB where Air Defense Command Headquarters was established. In 1976, Ent AFB was closed and Peterson Field was renamed Peterson AFB. During the 1970s, Peterson AFB became home to the 46th Aerospace Defense Wing (formerly the 4600th Air Base Group, Air Defense Command) and was assigned to Strategic Air Command (SAC).

On 1 September 1982, the Air Force activated Headquarters Air Force Space Command at Peterson AFB. This was followed by the activation of the 1st Space Wing on 1 January 1983. Peterson AFB remained under the command of the 1st Space Wing until the base was transferred to Air Force Space Command. Activation of the 3rd Space Support Wing followed in 1986. The 1st Space Wing and the 3rd Space Support Wing were merged in 1992 and redesignated as the 21 SW (Ravenstein 1986).

2.1.3 Military Missions

Peterson AFB continues to host the 21 SW Headquarters. The 21 SW provides tactical warning and support attack assessment of sea launched and intercontinental ballistic missile attacks against the United States and Canada. The Wing's composite forces have squadrons at 27 locations in ten countries.

The 21 SW has additional mission responsibilities, including provision of operational support to the headquarters for North American Aerospace Defense Command (NORAD), United States Space Command (USSPACECOM), and Air Force Space Command (AFSPC). The 21 SW also provides support functions such as personnel, finance, supply, and transportation for Schriever AFB, located approximately eight miles east of Peterson AFB. The mission statements for major permanently assigned units are presented below.

North American Aerospace Defense Command (NORAD)

NORAD is responsible to the United States Joint Chiefs of Staff for warning and assessment of an aerospace attack on North America, for providing surveillance and control of the airspace over Canada and the United States, for providing an appropriate response against air attack, and for providing support to other continental U.S. and Canadian commands as required. NORAD exercises operational control over assigned and attached air defense and aerospace warning forces as well as over those assets made available as augmentation forces.

United States Space Command (USSPACECOM)

USSPACECOM exercises operational control over assigned forces. In this capacity, it commands, plans for, coordinates, and employs forces to conduct those activities in space that support national objectives. It prepares plans for the conduct of military space operations, assigns tasks to, and directs coordination among the subordinate component commands (Air Force Space Command, Naval Space Command, and Army Space Command) to ensure a united front in accomplishment of assigned missions.

Air Force Space Command (AFSPC)

Air Force Space Command provides support from space to terrestrial forces, ground control of DoD satellites in peacetime and, through all levels of conflict, warning of a space or missile attack; and maintains the ability to negate enemy space systems during periods of conflict.

U.S. Army Space and Missile Defense Command/Army Forces Strategic Command (SMDC/ARSTRAT)

The Army Space and Missile Systems Defense Command is the birthplace and cradle of military space, and the center of military space acquisition excellence. Its mission is to develop, acquire, field, and sustain the world's best space and missile capabilities for the joint war fighter and the nation.

Tenant Unit Missions

In addition to the above organizations and their subunits, Peterson AFB hosts several major tenant units. These include:

302nd Airlift Wing (Air Force Reserve)

Equipped with C-130H transport aircraft, the Wing's mission is to deliver troops, supplies, and equipment in direct support of combat operations and training. In addition, the 302nd also has aircraft dedicated to the Modular Aerial Fire Fighting System (MAFFS). MAFFS is a May to October mission to deploy aircraft anywhere in North America within 24 hours at the request of the U.S. Department of Agriculture (USDA) Forest Service.

Air Education and Training Command (AETC)

The 533rd Technical Training Group, under AETC, develops and conducts joint space intelligence operations training for newly assigned personnel of the DoD and other federal agencies.

Consolidated Integrated Support Facility (CISF)

This Air Force Materiel Command (AFMC) unit's mission is to provide the logistics support infrastructure for all Air Force Space and Warning Systems worldwide. In fulfilling this function, CISF has evolved into a major tenant unit that supports space operations.

Peterson AFB also hosts several associated units that provide services necessary in the day-to-day operations of the base. These units include the 544th Intel Group, Air Force Operational Test and Evaluation Center (AFOTEC), Air Force Audit Agency, Canadian Forces Support Unit, American Red Cross, Army and Air Force Exchange Service, Civil Air Patrol, Air National Guard, USAF Academy Band, and the Defense Commissary Agency.

Listing of Tenants and NR Responsibility

Tenant Organization	NR Responsibility
302nd Airlift Wing (Air Force Reserve)	21 CES/CEIE
Air Education and Training Command (AETC)	21 CES/CEIE
Consolidated Integrated Support Facility (CISF)	21 CES/CEIE

2.1.4 Surrounding Communities

The city of Colorado Springs nearly encompasses Peterson AFB. It is the largest community in the area with a projected 2015 population of 457,912, up from 420,529 in 2010 (Colorado Springs Regional Business Alliance 2014). Other neighboring communities within a 10-mile radius are relatively small and include Ellicott, Falcon, and Security-Widefield. The projected 2015 population of El Paso County is 676,597, up from 622,263 in 2010 (Colorado Springs Regional Business Alliance 2014).

The following is a more detailed description of the land immediately adjacent to the installation.

North: The installation is bordered on the north by Cimarron Hills residential neighborhood and commercial areas. U.S. Highway 24 runs east-west immediately north of the North Gate.

East: A 21,325-acre parcel that belongs to the Banning Lewis Ranch Estate runs along the eastern border of the installation. This property has been annexed by Colorado Springs, and is primarily open space at

present. However, it has been zoned for future development, with 80 percent being zoned for residential use and 20 percent for commercial, office, and industrial development.

South: The land adjacent to the south, southwest, and southeast boundaries of the installation is the property of the Colorado Springs Airport. The land on city property east of the runway, along Marksheffel Road, is zoned for heavy industrial use.

West: The land adjacent to the West Gate is master planned and zoned by the city for commercial and light industry, but is sparsely developed at present. The city land between Peterson AFB's northwest corner and the southeast side of the intersection of Platte Avenue and Powers Road is classified as an airport overlay zone. This overlay zone, known as a critical subzone (designated a crash zone due to its proximity to an airport), is a county-designated land use on city property. Potential uses include industrial and heavy commercial facilities.

2.1.5 Local and Regional Natural Areas

Peterson AFB is near numerous natural attractions, the most prominent being Pikes Peak, Colorado's most famous "fourteener", or 14,000+-foot mountain. The mountains to the west of the installation provide outdoor recreational opportunities in several national and state parks and national forests. In addition to hiking trails and rough terrain, the surrounding mountainous territory includes Garden of the Gods Park, Cave of the Winds, and Seven Falls Canyon. The Pikes Peak Ranger District of Pike National Forest is dominated by Pikes Peak and the rugged topography and numerous drainages on its eastern slope.

Thirty-four smaller neighborhood parks and two major city parks are located within five miles of Peterson AFB. The two major city parks, Memorial Park and Palmer Park, are four to five miles, west and northwest respectively, from the installation. Bear Creek Park is the closest county park, approximately eight miles west of Peterson AFB.

Most greenways and trail corridors in the area are located in downtown Colorado Springs, such as Monument Valley Trail that runs along a portion of Monument Creek. Although there are no established trails near the installation, one, the Sand Creek Trail, is planned to run near the northwest corner of Peterson AFB and will be used for biking and hiking.

The Air Force Academy is located about 15 miles north of Peterson AFB. The heavily wooded 18,500-acre Academy grounds support wildlife and fisheries programs in coordination with the USFWS and CPW. The Academy is, in part, a tourist attraction, and also has numerous hiking, biking, and walking trails.

2.2 Physical Environment

2.2.1 Climate

El Paso County's climate is influenced by the high elevations of the Rocky Mountains' Front Range to the west, resulting in warm, sunny summers and cold, dry, low-humidity winters. January and December are the coldest months, with average highs of about 30ºF, and average lows of about 18ºF. July, the hottest month, has an average high of about 85ºF, and an average low of about 57ºF.

Annual precipitation averages 16.5 inches, with approximately 85 percent of the precipitation occurring between April and September during the growing season. The wettest and driest months are August and January, respectively. August averages 3.34 inches of precipitation and January averages 0.32 inches of precipitation. In an average year, approximately 38 inches of snow falls. Large snow drifts may occur when snow is accompanied by wind.

The prevailing wind is from the north at night, while south-southeast winds prevail during the day. The average annual wind speed is 10.4 mph, with the highest monthly average wind speed occurring in April at 12.2 mph (Larsen 1981). Approaching winter storms generally move either from north to south or from west to east. Severe thunderstorms occur from May through August along the Front Range and can result in flash flood conditions (greatest potential in July and August) and occasional tornadoes (peak in June). Lightning from such storms as well as human activity are the primary causes of wildfire. The wildland fire season lasts from April through October, although fires can occur whenever snow is absent.

In future years, temperature regimes in the region are expected to rise as a result of climate change (Walsh et al. 2014). This could affect the native natural resources found in and around Peterson AFB. In an ongoing post-grazing habitat monitoring study conducted by the Colorado Natural Heritage Program (CNHP) on U.S. Army Pueblo Chemical Depot, it was found that drought significantly impacted blue grama, the dominant native grass species in shortgrass prairie ecosystems (Rondeau et al. 2016). Changes in plant communities will likely result in changes in associated animal populations. It is difficult at this time to assess the full effects of climate change on floral and faunal communities on Peterson AFB.

Climate data for the Peterson AFB area can be found in the following table.

Peterson AFB Area Climate Data

Month	Temperature[1]			Precipitation[2]	Snowfall[2]
	High	Low	Average		
January	43.2	17.7	30.5	0.32	5.6
February	44.8	19.5	32.1	0.34	4.9
March	52.1	26.0	39.1	1.00	8.1
April	59.8	33.3	46.5	1.42	4.9
May	69.1	42.7	55.9	2.03	0.7
June	79.0	51.3	65.1	2.50	0
July	84.8	56.9	70.9	2.84	0
August	81.6	55.7	68.7	3.34	0
September	74.5	47.3	60.9	1.19	0.2
October	63.0	35.8	49.4	0.82	2.9
November	51.0	25.2	38.1	0.40	4.7
December	42.1	17.5	29.8	0.34	5.7

ANNUAL	62.2	35.8	49.0	16.54	37.7

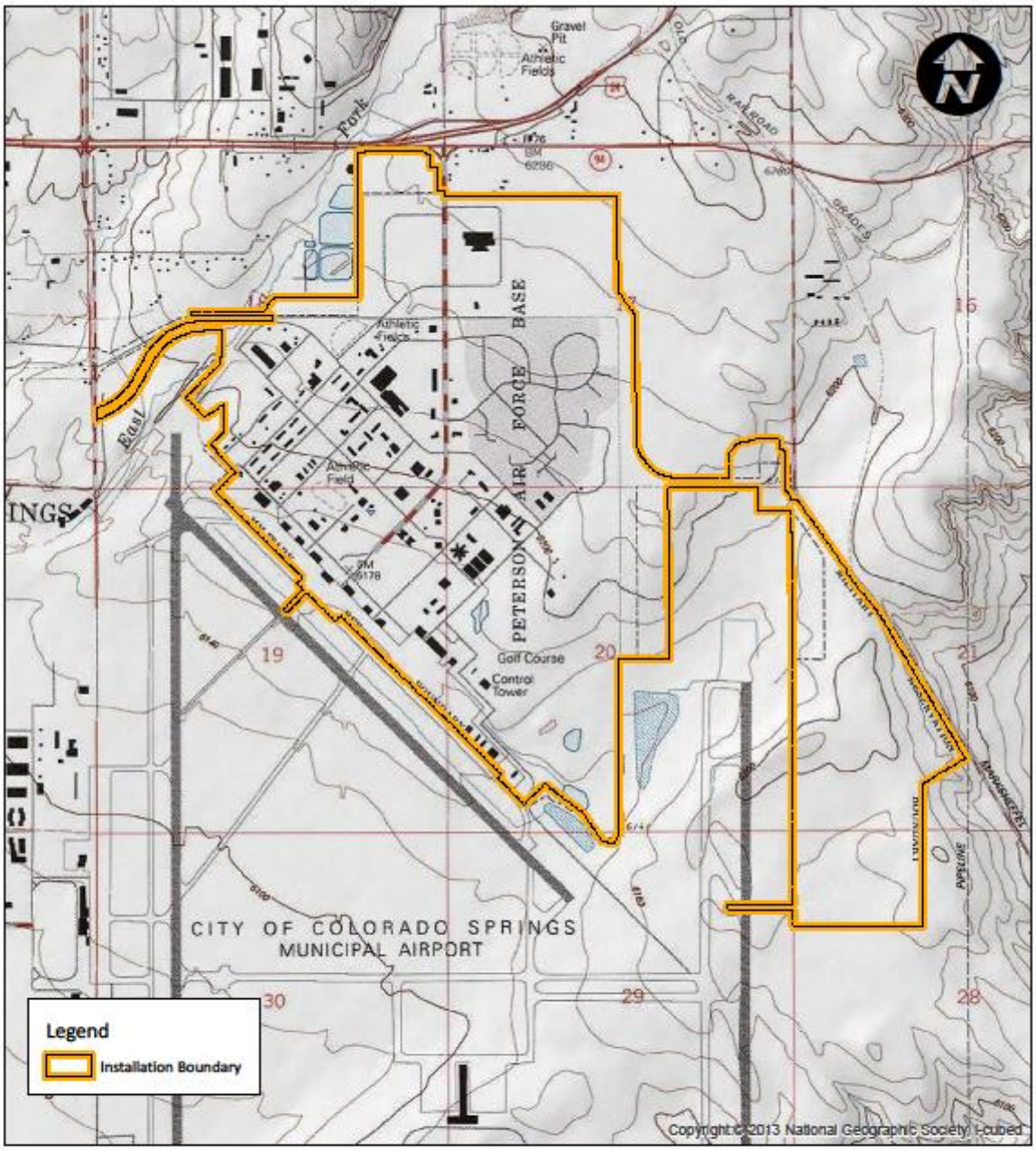
Source: *http://www.crh.noaa.gov/pub/?n=/climate/cli/coloradosprings.php*
[1]Temperature in degrees Fahrenheit
[2]Precipitation and snowfall in inches

2.2.2 Landforms

Peterson AFB is marked by flat plains gently sloping at about two percent grades to the south and southwest. Elevations on the base range from a low of 6,135 feet above mean sea level (msl) at the farthest east edge of Peterson East, to 6,280 feet above msl at the northeast corner of the base near the north gate (Figure: Installation Topography). The base can be characterized as having two distinct physiographic areas.

The first physiographic area is the foothills or Western Great Plains Grassland that has been completely replaced by base infrastructure and a golf course on the west parcel of Peterson AFB, but which still exists on approximately 65 acres of Peterson East. This area of native grassland is characterized by flat plains with elevations ranging between 6,135 to 6,240 feet above msl and a big bluestem – little bluestem (*Andropogon gerardii – Schizachyrium scoparium*) plant community.

The second physiographic area includes the East Fork of Sand Creek flowing southwest along the west boundary of the base. This riparian area extends for approximately 1,410 feet along the west boundary of the base in the vicinity of the west gate (Sovell and Smith 2012).



Installation Topography

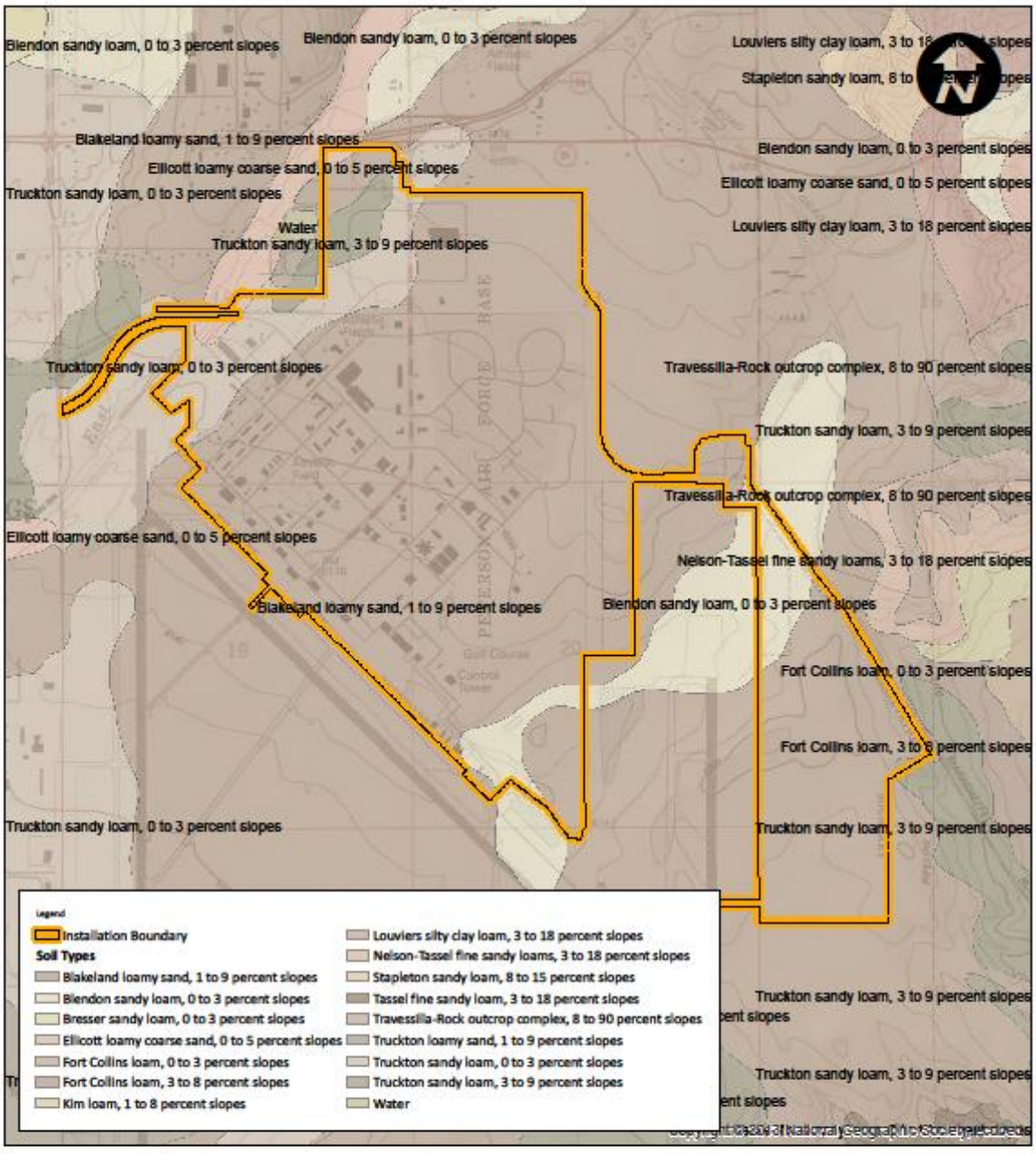
2.2.3 Geology and Soils

Peterson AFB is located on geologic formations predominantly comprised of Cretaceous and Tertiary rocks. These include Pierre Shale, Fox Hills Sandstone, the Laramie and the Dawson-Arkose Formations. These formations range from 125 to 211 million years old with a thickness between 610 feet and 4,000 feet. The Pierre Shale is present as bedrock beneath the base and, based on extrapolation from regional outcrops, the Fox Hills Sandstone and the Laramie Formation are likely to at least subcrop beneath the northern portion of the base. These geologic formations are covered by Quaternary alluvium that ranges from about 50 to 100 feet deep at the installation.

Various mineral deposits on Peterson AFB include sandstone and shale. The exposed Laramie Formation, which consists of soft shale deposits to hard white sandstone, is perhaps the most significant layer of rock on the installation. A layer of sub-bituminous coal lies 0-200 feet below the surface of this formation. The mineral resources in the western half of Peterson AFB consist of exposed sand and fine aggregate. The eastern half is covered with poor quality gravel.

In 1996, the El Paso County Commissioners approved a 1995 El Paso County Mineral Deposits Plan and Master Plan for the Extraction of Commercial Mineral Deposits prepared by the El Paso County Planning Department (El Paso County 1996). This plan is still in effect and includes Peterson AFB, but has no jurisdiction there because the installation is within the city of Colorado Springs. Nonetheless, the Plan depicts Peterson AFB on two concept maps. On the first, minerals on Peterson AFB are not included in the county plan for mineral extraction. On the second, the installation is shown as a potential mineral resource in the county. For the most part, the county has concluded that mining for coal in El Paso County's urbanized areas, including Peterson AFB, is not commercially feasible.

Soils in the Colorado Springs area formed on fans, terraces, and side slopes of the Front Range and adjacent plains. They vary from shallow and rocky in mountainous areas to sandy loams on the plains. At Peterson AFB, soils may be characterized as sandy and originating from weathered feldspar-rich sedimentary units, with the result that they have a neutral pH and a moderate to high infiltration capability. There are no prime farmland soils on the installation. There are four soil classifications found on Peterson AFB, two of which range from 0 to 9 percent slope while the other two are relatively flatter. The predominant soil is Blakeland loamy sand that is highly erodible unless relatively dense plant cover is maintained. Truckton sandy loam, found at the north and northeast corners of the base, can be cultivated if it is irrigated and specially managed. The Peterson AFB soil types can be seen at Figure: Installation Soil Types.



Installation Soil Types

2.2.4 Hydrology

A Stormwater Drainage Study conducted on Peterson AFB in 2007 (URS Group, Inc. 2007) determined that the base is positioned within three large watersheds: East Sand Creek to the north, Peterson in the center, and Jimmy Camp Creek to the southeast. The functional study area of approximately 1,800 acres was defined by Platte Avenue to the north, Marksheffel Road to the east, East Sand Creek to the West, and Colorado Springs Airport to the south.

The study area was broken into four major areas of development. The Command Complex area is located in the northern end of the East Fork of Sand Creek watershed. The Community Support Area represents the majority of the Peterson watershed. The Peterson East Area is located in the northern portion of Jimmy Camp Creek watershed. The East Sand Creek watershed is made of two subwatersheds and has a contributing drainage area of approximately 0.6 square miles at its confluence with East Sand Creek. Open space and developed conditions on the flat slopes dominate the East Sand Creek watershed.

The Peterson watershed does not have a direct confluence with any single watercourse. It is made up of six subwatersheds with a total drainage area of approximately 1.1 square miles, and is dominated by developed conditions on relatively flat slopes. There is a large detention pond located south of the Silver Spruce Golf Course that controls the 2- to 100-year storm events.

The Jimmy Camp Creek watershed is made up of two subwatersheds with a total drainage area of approximately 1.2 square miles and is dominated by open space on relatively flat slopes with little development.

The complete watershed study is available for review at the 21st Civil Engineer Squadron (CES) Water Program Manager's office.

Groundwater in the Peterson AFB area is present in two major aquifers, one in the Quaternary alluvium and the other in the lower Laramie Formation and the upper Fox Hills Sandstone. Deeper aquifers lie beneath about 3,000 feet of Pierre Shale. The alluvial aquifer is about 12 to 30 feet below the surface on Peterson AFB. In the vicinity of the golf course, this alluvium is saturated for 10 to 40 feet above the bedrock, presumably as a result of golf course irrigation, because saturation of the alluvium occurs elsewhere on the base only in the vicinity of the East Fork of Sand Creek.

The slope of the bedrock surface to the south-southwest is paralleled by the potentiometric surface of the groundwater. The aquifer in the Laramie Formation and upper Fox Hills Sandstone is 200 to 300 feet thick and may be separated locally into upper and lower units. The flow of groundwater in this unit is north-northeast toward the center of the Denver Basin. These aquifers are generally recharged by surface water or other water-bearing units rather than by precipitation due to the low mean annual rainfall and high evapotranspiration in the area. Along Fountain Creek, groundwater generally moves from alluvial aquifers into the stream and from the stream into bedrock aquifers where the stream crosses outcrops of bedrock.

2.3 Ecosystems and the Biotic Environment

2.3.1 Ecosystem Classification

The natural distribution of habitats on the base is dependent upon topography, moisture, and abiotic factors (soil, water, air, temperature, sunlight) associated with surface disturbance. Peterson AFB has undergone significant development and has few remaining areas containing native vegetation. The

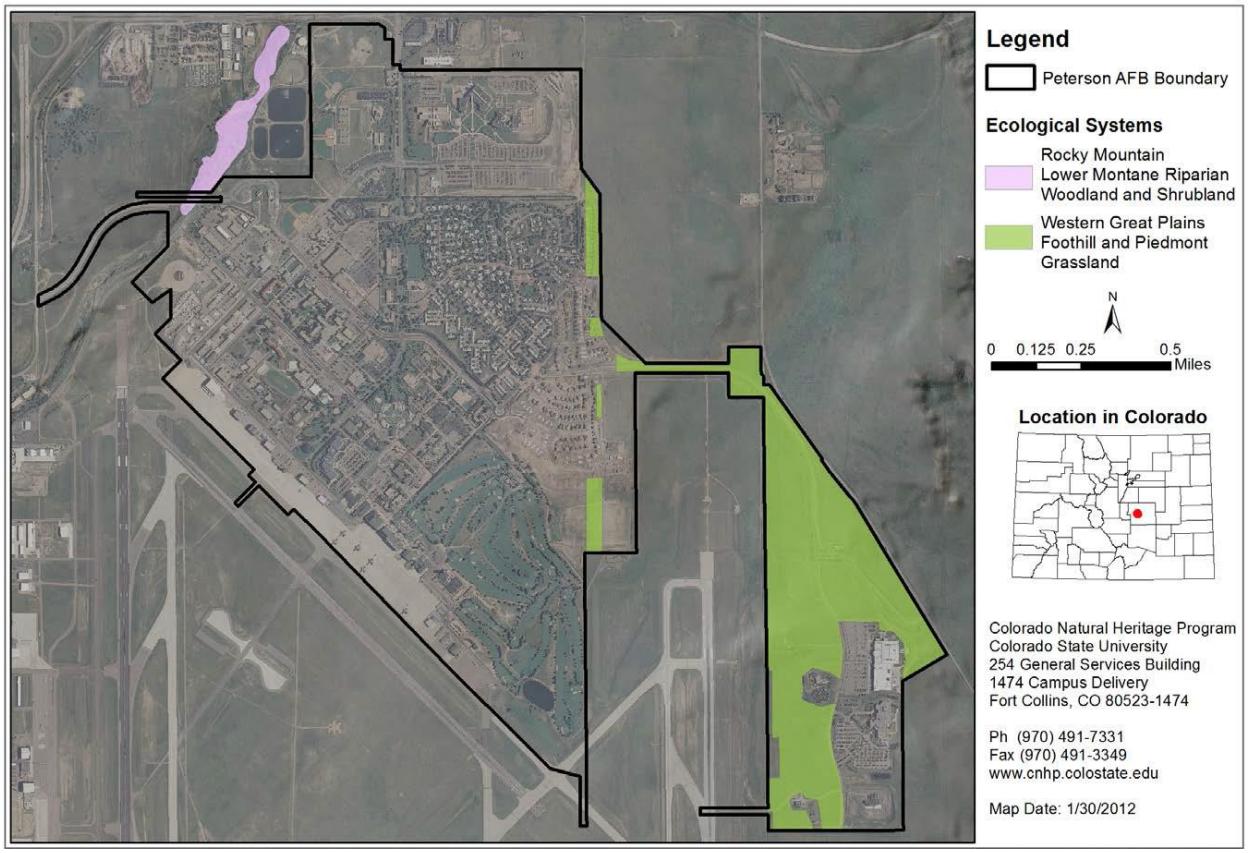
remaining natural vegetation is typically described in terms of two major ecological systems: Western Great Plains Foothill Grassland, and Rocky Mountain Lower Montane Riparian Woodland and Shrubland (Figure: Ecological Systems (Sovell and Smith 2012)). The distribution of these two main ecological systems are defined by the drainages on the base and limited by the installation's developed infrastructure. The combined distribution of these ecological systems encompasses the undisturbed portions of the base.

2.3.2 Vegetation

2.3.2.1 Historic Vegetative Cover

Western Great Plains Grassland

The Western Great Plains Grassland is prevalent on Peterson East, east of the airport and west of the Commissary and Base Exchange. This grassland occurs on flat to gently rolling plains, and its distribution is defined by the location of favorable soils that allow seedlings to survive. It is best characterized as a big bluestem – little bluestem xeric tallgrass prairie on mostly moderate to gentle slopes, usually at the base of foothill slopes such as the hogbacks of the Rocky Mountain Front Range, where it typically occurs as a relatively narrow elevation band between montane woodlands and shrublands and the shortgrass steppe.



Ecological Systems (from Sovell and Smith 2012)

The Western Great Plains Grassland is one of the most severely altered ecological systems in North America. Alteration is due to fire suppression, housing and water developments, and conversion to hay meadows, overgrazing, and other human modifications. Fire suppression has allowed for shrub and tree invasion into the grassland and alters the species composition as well (Mast et al. 1997, Mast et al. 1998). Housing and water developments severely fragment and usually destroy the habitat, while agricultural use has converted tall grass prairies into hay meadows dominated by exotic grasses, such as smooth brome (*Bromopsis inermis*). Threats are very high for this grassland and therefore a premium is set on protecting the existing occurrences.

Rocky Mountain Lower Montane Riparian Woodland and Shrubland

At Peterson AFB, this system occurs within the flood zone and immediate stream bank of the East Fork of Sand Creek and covers approximately one acre. It is located at the Stewart Avenue Bridge near the West Gate entrance to the base. The system is dominated by cottonwood (*Populus deltoides*) and willow (*Salix* spp.). This system is dependent on a natural hydrologic regime, especially annual to episodic flooding. These woodlands and shrublands grow within a continually changing alluvial environment due to the ebb and flow of the creek, and riparian vegetation is constantly being "re-set" by flooding occurrences.

The importance of riparian areas to wildlife has long been emphasized. Various figures are often quoted, emphasizing the small percentage of the landscape occupied by riparian vegetation and the large percentage of animal species that rely on this habitat. Riparian habitats represent less than 1% of the total acreage of public lands in the 11 western states, about 72% of all reptiles, 77% of all amphibian species, 80% of all mammals, and 90% of all bird species which occur regularly in the western United States routinely use riparian areas for food, water, cover, or migration routes (Grahame and Sisk 2002). Birds use this habitat for nesting, cover, resting, migration stopover areas, and migration corridors (Samson and Knopf 1996). This system has the richest avian species component of any of Colorado's habitats. There are many small mammals that use riparian areas for foraging, nesting, and as dispersal and migration corridors (Sovell and Smith 2012).

2.3.2.2 Current Vegetative Cover

Although vegetative cover on the installation has been drastically altered over the years, a small area of the tallgrass prairie vegetative community association of big bluestem and little bluestem is found on the base. (The big bluestem – little bluestem association was formerly known as the big bluestem – prairie sandreed association.) This rare natural community is similar in composition to other remnant tallgrass prairie populations found closer to the foothills along the Front Range and near the Air Force Academy (Schuerman et al. 1997, Schorr and Abbott 2004, Sovell and Smith 2012). Land uses that affected the natural processes of this original ecosystem include cattle grazing, agriculture, human settlement, and progressive urban development.

The bulk of the vegetative cover on Peterson AFB occurs in semi-improved or improved landscape areas of the base proper, along the main streets, and in the military family housing areas. Semi-improved areas of the base are mowed on an "as needed" basis depending on rainfall and vegetation growth, the nature and density of the area development, and aesthetic considerations. Improved areas of the base are irrigated to support either lawn turf of predominately Kentucky bluegrass (*Poa pratensis*), or the many hundred ornamental landscape trees and plantings all across the base.

2.3.2.3 Turf and Landscaped Areas

Grounds are generally categorized as improved, semi-improved, unimproved, or aquatic.

Improved grounds are defined as grounds on which intensive development and maintenance measures are performed. The category normally applies to areas within the built-up section of an installation that contains irrigated lawns, landscaping, rock beds, plant beds, parade grounds, and athletic fields. They include urban development such as housing, administration, or community service areas.

Semi-improved grounds are those that are tended to on an as-needed basis. Primary care for these areas includes weed control, native grass planting, and mowing around facilities, roadways, flight line and force protection and secure areas. Mowing is maintained at approximately one-time a month during the growing season, and most of the areas are not irrigated.

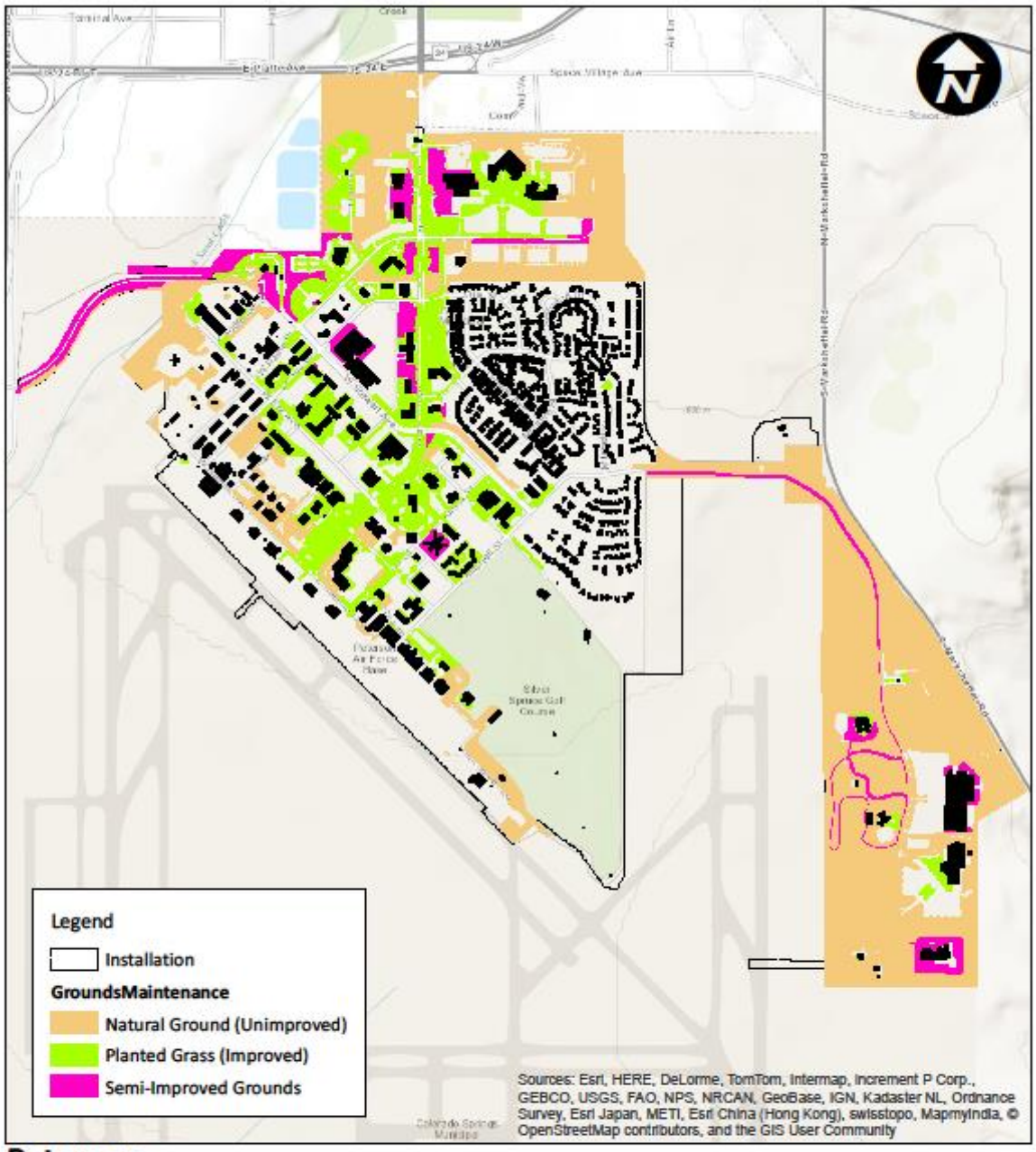
Unimproved grounds are not landscaped or irrigated. The areas classified as unimproved are typically mowed once a year to reduce weeds and minimize fire hazards. Aquatic type refers to three manmade ponds comprising six acres on the Silver Spruce Golf Course.

Approximate acreages for the Peterson AFB grounds categories can be found on Table: Grounds Categories, 2014. Figure: Improved, Semi-improved, and Unimproved Lands illustrates the grounds categories on Peterson AFB.

Grounds Categories, 2014[1]

Grounds Categories	Approximate Acres
IMPROVED	**1079**
Buildings and Structures	*100*
Residential – Privatized Housing	*216*
Hardened Surfaces (pavement, sidewalks)	*426*
Parks, Greenbelts, Lawns, Golf Course	*367*
SEMI-IMPROVED	**41**
UNIMPROVED	**266**
AQUATIC	**6**
Total Acreage	**1,392**

[1]Some categories overlap; therefore, acreages are not discreet and will not sum up accordingly.



Improved, Semi-improved, and Unimproved Lands

2.3.3 Fish and Wildlife

The prairie environment upon which Peterson AFB is located was once more biologically diverse. In the past, bison (*Bison bison*) roamed throughout the region as did pronghorn (*Antilocapra americana*). The black-tailed prairie dog, which is currently listed by the state of Colorado as a "special concern" species (Colorado Parks and Wildlife 2017), is also native to the area. It provided critical food and habitat for the black-footed ferret (*Mustela nigripes*), a federally listed endangered species. Black-tailed prairie dog populations have declined throughout their range in North America, primarily as a result of habitat fragmentation, the widespread occurrence of plague, and lethal control actions undertaken by man. Habitat fragmentation sometimes hampers the recovery of colonies suffering from plague epizootics by restricting recruitment and may play a key role in the severity of epidemics.

The CNHP conducted natural resource surveys on Peterson AFB in 1996 (Schuerman et al. 1997), 2004 (Schorr and Abbott 2004), 2011 (Sovell and Smith 2012) and 2017-2018 (Sovell and Doyle *in prep*); and surveys specifically for noxious weeds were conducted in 2003 (Anderson et al. 2003). The surveys were conducted during the summer months; survey dates varied according to the specific survey and/or the target elements. As a result, a total of 52 bird, 23 mammal, 3 reptile and amphibian, 26 insect, and 1 snail species were recorded on the installation. Some sightings may be questionable because the animals, if correctly identified, were out of the known range for their respective species. Along with wildlife species, native and non-native plant species were also recorded on the installation. Although the specific survey dates were not identified in most of the CNHP reports, the surveys were conducted, "….at the appropriate time as dictated by the phenology of the targeted elements." (Schuerman et al. 1997). A complete list of plants and animals documented on Peterson AFB can be found in the Plant and Animal Species Documented on Peterson AFB Appendix.

2.3.4 Threatened and Endangered Species and Species of Concern

The Information for Planning and Construction (IPaC) resource list, accessible from within the USFWS Colorado Ecological Services Field Office website (https://ecos.fws.gov/ipac/location/index), lists the following floral and faunal species and critical habitat as trust resources, (those species that are Endangered, Threatened, Candidate, or Proposed for listing under the Endangered Species Act, and habitats critical to the survival of such species), in El Paso County:

Species	Scientific Name	Federal Listing
Mammals		
North American Wolverine	*Gulo gulo luscus*	Proposed Threatened
Birds		
Least Tern	*Sterna antillarum*	Endangered
Mexican Spotted Owl	*Strix occidentalis lucida*	Threatened
Piping Plover	*Charadrius melodus*	Threatened
Whooping Crane	*Grus americana*	Endangered

Fishes

Greenback Cutthroat Trout	*Oncorhynchus clarkii stomias*	Threatened
Pallid Sturgeon	*Scaphirhynchus albus*	Endangered

Flowering Plants

Ute Ladies'-tresses	*Spiranthes diluvialis*	Threatened
Western Prairie Fringed Orchid	*Platanthera praeclara*	Threatened

The Sikes Act (16 USC 670a-670o, as amended) requires all military reservations with adequate natural resources to consider federally listed threatened and endangered floral and faunal species and critical habitats if they may be found on the installations. Of those species listed, Peterson AFB does not have adequate habitat for any of the listed IPaC species.

No threatened, endangered, or CNHP-tracked plants were found on Peterson AFB during the CNHP surveys (Schuerman et al. 1997, Schorr and Abbott 2004, Sovell and Smith 2012). However, there was one CNHP fully-tracked plant community recorded on site, the xeric big bluestem – little bluestem tallgrass prairie community (*Andropogon gerardii - Schizachyrium scoparium*). This community was identified by Schuerman et al. (1997) and also documented by Schorr and Abbott (2004). This occurrence is considered a good occurrence of a state imperiled plant community and is at high risk for extinction due to restricted range and few remaining populations. This is possibly the largest known occurrence in the state and only one of four known for Colorado (Sovell and Smith 2012).

The xeric tallgrass prairie community occurrence consists of three small polygons on Peterson East, occupying approximately 25 acres and which are part of a larger occurrence surrounding Peterson AFB and the Colorado Springs Airport. In total, the entire occurrence occupies approximately 2,525 acres and its size and condition warrant a rank of good estimated viability.

A CNHP Potential Conservation Area (PCA) also overlaps Peterson AFB. A PCA is CNHP's best estimate of the primary area required to support the long-term survival of the targeted species or natural communities contained by the PCA (Colorado Natural Heritage Program 2007). A PCA was drawn for the xeric tallgrass prairie community and associated plants and animals at Peterson AFB and is called The Colorado Springs Airport PCA. This PCA includes most of Peterson AFB within its boundary. The PCA is assigned a High Biodiversity Significance rank by virtue of the rarity and good condition of the tallgrass prairie community it contains (Sovell and Smith 2012).

Unfortunately, the tallgrass prairie community on Peterson AFB is found in the Peterson East area, in close proximity to the airfields. That being the case, the area is mowed intermittently to help reduce the threat of BASH issues. In addition, the area is scheduled for construction and much of the remaining grassland on Peterson East will be lost to development.

No federally listed threatened or endangered animals were found at Peterson AFB. However, the black-tailed prairie dog, which was observed at the base (Sovell and Smith 2012), is a species of special concern in Colorado and fully tracked by CNHP. This species is considered to be secure on a global scale, but there

is cause for long-term concern due to declines in population. Statewide the species is considered vulnerable with a moderate risk of extinction due to recent and widespread declines in the state. There is a large prairie dog complex surrounding Peterson AFB and the Colorado Springs Airport (Sovell and Smith 2012).

There have been limited occurrences of prairie dog colonies on the base. Extensive burrows were observed by the CNHP in 2004 on the Colorado Springs Airport land to the east of Buildings 1, 2, and 3. Efforts have been made to modify the chain link fence that runs along the Peterson AFB eastern perimeter to stop prairie dogs from burrowing beneath the fence and onto the installation. Surveys conducted in March of 2012 did not show any movement of prairie dogs into what is now a family housing area. Modification of the perimeter fence at specific locations on the base will continue at selected sites as need arises and site conditions dictate.

Several bird species recorded on Peterson AFB have been identified as being sensitive, unique, or potentially threatened by one avian concern or another. For example, the ferruginous hawk (*Buteo regalis*) is state-listed as a species of special concern (not a statutory category) by CPW, and is ranked by the CNHP as G4/S3B, S4N (globally apparently secure, however the breeding population may be "vulnerable" while the nonbreeding population may be "apparently secure" in the state) (Colorado Natural Heritage Program 2014). The lark bunting (*Calamospiza melanocorys*) is listed as a species of concern on the USFWS Birds of Conservation Concern (BCC) list for Bird Conservation Region (BCR) 18 (Shortgrass Prairie) (see *http://www.fws.gov/migratorybirds/currentbirdissues/management/BCC. html*), and as a stewardship species of management concern on the Partners in Flight (PIF) list for BCR 18 (see *http://www.partnersinflight.org/*). The grasshopper sparrow (*Ammodramus savannarum*) is likewise listed by PIF as a stewardship species of management concern. The short-eared owl (*Asio flammeus*) is listed by PIF as a management watch list species, and ranked by CNHP as globally demonstrably secure, while the breeding population may be imperiled in the state. Finally, the Swainson's hawk (*Buteo swainsoni*) is a management watch list species for BCR 18 as determined by PIF. See the Table: *Sensitive Species/Communities Potentially Found on Peterson AFB* for an overview of sensitive species on Peterson AFB.

The USFWS BCC list is intended to identify species, subspecies, or populations of migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act, as well as represent the highest conservation priorities for migratory and non-migratory species (USFWS 2008). In September, 2014, a Memorandum of Understanding (MOU) was renewed by DoD and the USFWS to promote the conservation of migratory birds in response to Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. The MOU serves as a vehicle by which the DoD and the USFWS may work collaboratively on bird conservation issues and actions, including bird inventories and monitoring, invasive species management, and bird habitat protection.

In 2005 the Colorado Division of Wildlife (now CPW) developed the Colorado's Comprehensive Wildlife Conservation Strategy (Colorado Division of Wildlife 2005) in response to a national funding opportunity provided to states that develop such plans. This conservation strategy identifies Colorado wildlife species that are of greatest conservation need, as determined primarily by federal and state listing status, and inclusion in the Colorado Natural Heritage Program global and state ranking system. The conservation strategy also addresses habitat types and relates wildlife species to those habitats. In 2015 CPW revised its conservation strategy (Colorado Parks and Wildlife 2015), and refined its categorization scheme of Colorado's wildlife species determined to be Species of Greatest Conservation Need (SGCN). These species are assigned to one of two tiers: Tier 1 species are of greatest conservation concern while Tier 2 species are, while still in need of monitoring, of somewhat less concern. No Tier 1 species have been

documented on Peterson AFB, while seven Tier 2 bird species have been observed: ferruginous hawk, grasshopper sparrow, lark bunting, northern harrier (*Circus cyaneus*), short-eared owl, and Swainson's hawk. Burrowing owls (*Athene cunicularia*; Tier 1), and long-billed curlews (*Numenius americanus*; Tier 2), have been observed on properties immediately adjacent to Peterson AFB. In addition, three Tier 2 mammals: black-tailed prairie dog, white-tailed jackrabbit (*Lepus townsendii*), and swift fox (*Vulpes velox*), have been observed on or in the immediate vicinity of Peterson AFB.

The Strategic Plan for Amphibian and Reptile Conservation and Management on Department of Defense Lands (Lovich et al. 2015) cites statistics indicating significant declines in herpetofaunal populations across the nation, and provides a listing of 24 federally threatened and endangered reptile and amphibian species found on DoD lands. Furthermore, Petersen et al. (2015) indicates that out of 336 confirmed herptile species found on Air Force installations, 6 federally endangered, 10 threatened, and 3 candidate species are documented on Air Force bases. However, herptile species expected to be found on Peterson AFB are neither state- nor federally listed threated, endangered or otherwise species of concern.

During the past several years, a serious decline has been detected in pollinator populations around the globe (National Research Council 2007, The White House 2015, U.S. Department of Agriculture and U.S. Department of Interior 2015). Pollinators, such as bees, butterflies and moths, and some bats and birds, are essential for the sustainment of native and agricultural fruit, nut, and vegetable plants worldwide. They pollinate 80% of wild flowering plants in temperate latitudes, and support an estimated 18.3 billion dollar crop industry in the United States alone (U.S. Department of Agriculture and U.S. Department of Interior 2015). In 2014 the President issued a Presidential Memorandum, "Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators" (The White House 2014), calling for the establishment of a Pollinator Task Force consisting of the heads of several federal agencies and organizations to address and reverse pollinator population declines. Furthermore, the DoD signed a Memorandum of Understanding with Pollinator Partnership, a nonprofit organization committed to the restoration of pollinator populations and the environments they reside in (see *http://www.pollinator.org/*). This memorandum outlines measures that the DoD and Pollinator Partnership, respectively, will adopt to promote the conservation and management of pollinators, their habitats and associated ecosystems. Despite the fact that comprehensive inventories for rare, unique, or otherwise sensitive floral and faunal resources have been conducted on Peterson AFB (Schuerman et al. 1997, Schorr and Abbott 2004, Sovell and Smith 2012), no surveys have been undertaken specifically for pollinators.

Sensitive Species/Communities Potentially Found on Peterson AFB

		Federal/ State Status	USFWS BCC[1]	PIF[2]	CNHP rank[3]	Recorded on site
Plants						
Dwarf Milkweed	*Asclepias uncialis uncialis*	T2			G3G4T2T3/S2	
Xeric Tallgrass Prairie	*Andropogon gerardii – Schizachyrium scoparium*				G2?/S2	X
Birds						
Bobolink	*Dolichonix oryzivorus*	T2			G5/S3B	
Burrowing Owl	*Athene cunicularia*	ST,T1	X		G4/S4B	AP
Cassin's Sparrow	*Peucaea cassinii*	T2			G5/S4B	

Ferruginous Hawk	*Buteo regalis*	SC,T2			G4/S3B,S4N	X
Golden Eagle	*Aquila chrysaetos*	T1	X			X
Grasshopper Sparrow	*Ammodramus savannarum*	T2				X
Lark Bunting	*Calamospiza melanocorys*	T2	X			X
Long-billed Curlew	*Numenius americanus*	SC,T2	X		G5/S2B	AP
Northern Harrier	*Circus hudsonius*	T2				X
Prairie Falcon	*Falco mexicanus*	T2	X		G5/S4B,S4N	X
Short-eared Owl	*Asio flammeus*	T2			G5/S2B	X
Swainson's Hawk	*Buteo swainsoni*	T2				X
Upland Sandpiper	*Bartramia longicauda*	T2	X			AP
Mammals						
Black-tailed Prairie Dog	*Cynomys ludovicianus*	SC,T2			G4/S3	X
Swift Fox	*Vulpes velox*	SC,T2			G3/S3	AP
White-tailed Jackrabbit	*Lepus townsendii*	T2				AP
Insects						
Colorado Blue	*Euphilotes rita coloradensis*	T2			G3G4T2T3/S2	
Monarch Butterfly	*Danaus plexippus*	T2				
Mottled Duskywing	*Erynnis martialis*	T2			G3/S2S3	
Ottoe Skipper	*Hesperia ottoe*	T2			G3G4/S2	
Regal Fritillary	*Speyeria idalia*	T2			G3/S1	
Rhesus Skipper	*Polites rhesus*	T2			G4/S2S3	

[1]USFWS Birds of Conservation Concern

[2]Partners in Flight

[3]Colorado Natural Heritage Program rank. The CNHP ranking system is too extensive to list here. To review the ranking system, visit *https://cnhp.colostate.edu/ourdata/help/heritage/*.

FE = Federally Endangered; FT = Federally Threatened; SE = State Endangered; ST = State Threatened; SC = State Special Concern; T1 = State Tier 1 Species of Greatest Conservation Need (SGCN); T2 = Tier 2 SGCN

X = Documented on site. AP = Observed on adjacent properties.

2.3.5 Wetlands and Floodplains

Wetlands are characterized by areas that are inundated or saturated with surface or groundwater at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Based on surveys conducted by the U.S. Army Corps of Engineers (USACE) in 2001, there are no jurisdictional wetlands on the installation

(Department of the Army, Corps of Engineers 2001). Although Ponds 1, 2, and 3 are listed on the National Wetlands Inventory (NWI) map, they are not wetlands regulated by the USACE under Section 404 of the Clean Water Act. They were created on dry land with no naturally occurring wetland vegetation or natural hydrology, each pond bottom is lined with a fabric membrane, and they do not drain to waters of the United States.

The USACE also investigated the reaches of the East Branch of Sand Creek that extend onto the installation. Their investigation indicated that, at the time of the surveys, there were no wetlands in this area. Furthermore, there have been no terrain changes in this area that would cause wetland formation. The status of the open bodies of water on Peterson AFB has not changed since the original evaluation by the USACE. A small manmade wetland, as determined by the presence of cattails (*Typha latifolia*), was created by a storm drainage pipe emptying into a shallow depression in the Peterson East area. The site is not identified as a wetland on National Wetland Inventory maps however (National Wetlands Inventory Map, Peterson AFB, Appendix C), probably because the drainage pipe was installed after the wetlands inventory was conducted. It should be noted that if the storm water runoff was not piped to this location, a wetland would not exist at the site.

A l00-year floodplain associated with the East Fork of Sand Creek covers 3.5 acres in the northwest corner of the installation. The creek remains dry for much of the year except below the Cherokee District sewage lagoons, where year-round inflow keeps the streambed wet until it joins Sand Creek.

2.3.6 Other Natural Resource Information

Peterson East supports one of the largest remnant populations of tallgrass prairie in Colorado. The biodiversity of the occurrence includes not only big bluestem and little bluestem, but prairie sandreed (*Calimovilfa longifolia*), needle and thread grass (*Hesperostipa comata*), blue grama (*Chondrosum gracile*), buffalograss (*Buchloe dactyloides*), and sand dropseed (*Sporobolus crytandrus*) among others, along with a diverse cover of forbs. There is also a rich community of animals occupying the native tallgrass including white-tailed jackrabbit, pocket gopher (*Thomomys* spp.), grasshoppers, butterflies, and numerous grassland birds including the grasshopper sparrow, which is identified as a "stewardship species" of "continental importance" by PIF (Rich et al. 2004). Stewardship species are birds that have a proportionately high percentage of their world population within a single Avifaunal Biome, in this case the prairie biome. Avian stewardship species merit special attention for conservation action within their core ranges.

The Peterson Main survey area was very disturbed with a high percentage of non-native plants including Russian thistle (*Salsola australis*), kochia (*Bassia sieversiana*), and field bindweed (*Convolvulus arvensis*), which is a C-listed noxious weed in Colorado (Colorado Department of Agriculture 2017). Very few animals were observed in the area. The bird species present included mourning doves (*Zenaida macroura*) and magpies (*Pica hudsonia*); both of these species tend to adapt easily to human modified landscapes (Kingery 1998).

In addition, a colony of cliff swallows (*Petrochelidon pyrrhonota*) has nested for at least 14 years beneath the bridge over the East Fork of Sand Creek, at the installation's west entry point. Due it the site's proximity to the airport and AFB runways, the Animal and Plant Health Inspection Service's Wildlife Biologist installed nest deterrence spikes on the bridge in 2016 to help reduce or prevent Bird/Wildlife Aircraft Strike Hazard (BASH) incidents. The effort was successful in preventing swallows from nesting on the bridge in 2016.

The East Fork of Sand Creek contains considerable evidence of human changes to the creek bed including the installation of concrete channels, boulders, concrete banks and dyke structures along the drainage.

There are water diversions, pipes, and other structures that indicate water flows are manipulated on the creek. There is considerable sediment in the stream, indicating extreme flows and fluctuations. The area was dominated by a mix of native and non-native plant species and some noxious weeds. The noxious weeds included Canada thistle (*Cirsium arvensis*), bouncingbet (*Saponaria officinalis*), salt cedar (*Tamarix ramosissima*), and Russian-olive (*Elaeagnus angustifolia*) which are all B-listed noxious weeds (Colorado Department of Agriculture 2017). There was no vegetation in the dried stream channel. Although the area does support some native wetland vegetation, no endangered or threatened species were observed.

Due to the significant anthropogenic hydrological manipulations of Sand Creek and the retention pond, it is not surprising that the Colorado butterfly plant (*Gaura neomexicana coloradensis*), Ute-ladies tresses orchids (*Spiranthes diluvialis*), targeted fish or amphibians, or other sensitive prairie plants or animals were not found in these areas.

Today, Peterson AFB contains fewer species and plant communities than once occupied the site in historic times. Although a moderately diverse community of plants and animals still occupies the base, urban and commercial development have resulted in habitat loss, degradation, and fragmentation with subsequent declines in biodiversity in the immediate region. This in combination with increased nutrient and sediment loads to aquatic systems and the lack of suitable microhabitat have all caused a decline in biodiversity at the base. Nonetheless, elements of conservation priority including the grasshopper sparrow, ferruginous hawk, black-tailed prairie dog, and mesic tallgrass prairie were documented at Peterson AFB, suggesting that the base and surrounding airport property act as a surrogate reserve or refugia of biodiversity, in what otherwise is a highly modified urban/exurban and commercial landscape (Sovell and Smith 2012)..

2.4 Mission Impacts on Natural Resources

2.4.1 Natural Resource Constraints to Mission and Mission Planning

Requirements for continual base development have critical issues of constraint and encroachment for Peterson AFB. Land use constraints describe existing land use conditions, establish goals and objectives for current and future land use, evaluate alternatives, and establish land use policies to meet the future development needs of Peterson AFB.

Potential encroachment conflicts are continually analyzed and addressed through the cooperative and coordinated efforts of Peterson AFB and local and regional planning agencies. The area north of the base is currently zoned for residential and commercial uses and, for the most part, was developed with the exception of the parcel directly north of the Command Complex along Space Village Avenue. The land adjacent to the West Gate is owned by Colorado Springs Airport and is sparsely developed. Land areas adjacent to the southwest, south, and southeast boundaries of Peterson Main are designated for airport planned commercial and business development. A Master Plan has been developed for the area by the Colorado Springs Airport (City of Colorado Springs 2013).

The 21,325-acre parcel of land adjacent to the installation's eastern boundary, known as the Banning Lewis Ranch, is currently master planned for growth in the long term with a timeframe of approximately thirty years. Approximately 20 percent of the land is zoned for commercial and industrial uses; the remaining 80 percent is zoned for residential, parks and recreation, open space, and light retail use. The Master Plan for the development will include up to 2,500 single and multi-family homes, and will include recreation and pedestrian use areas that are integrated into the new urban and mixed use design. This area will also experience an exponential growth in population of approximately 170,000-200,000 people; currently, the area has around 18,000 people within the development boundaries.

Space and facilities on Peterson Main presently are reserved for programmed expansion of existing mission functions. Land in the Peterson East area has been set aside primarily to accommodate future missions and additional base support. The challenge in the future will be to maintain harmonious land use patterns as demands for new facility sites drive infilling of existing open spaces in the present built-up area and as expansion occurs in the undeveloped Peterson East area. Land will be required for future expansion of industrial and community facilities to improve base support capabilities. At the same time, preservation of open space and recreational areas is essential to sustain the quality of life that makes Peterson AFB an attractive place to live and work.

Peterson AFB has some potential as a relocation site for activities from other bases identified for closure and could experience growth over the next few years. Recent actions have now tasked the base with the possibility of new missions or growth in the near future.

Peterson Main land use patterns would require little change except to correct minor incompatibilities or inadequacies in existing land uses. About 88 acres of buildable land in the Peterson East area has been developed, and construction is ongoing. Future land use needs will be primarily mission related and/or community based, and all available buildable land on Peterson East is expected to be used to full capacity.

2.4.2 Land Use

During heavy summer rains portions of the floodplain in the northwest corner of the installation can become flooded. In accordance with AFI 32-7064, before development can occur in a floodplain, an Environmental Impact Analysis must be conducted, alternatives considered, and special approval received from Headquarters Air Force. Refer to AFI 32-7064 (Chapter 5), and Executive Order 11988, Floodplain Management, for more detailed guidance on this issue.

2.4.3 Current Major Impacts

Urbanization and continued development on Peterson AFB are the installation's primary impacts on the environment. Specifically, these impacts may involve possible groundwater contamination from Installation Restoration Program (IRP) sites, surface water contamination and runoff from paved areas, air pollution attributed to vehicular traffic, and noise concerns associated with military air traffic operating from the Colorado Springs Airport. In addition, the limited amount of open space on the base continues to shrink and become more compartmentalized as development fragments the remaining areas of wildlife habitat and natural vegetation.

Significant rain events can result in soil erosion due to erodible bare soils. During these events, soil-bearing flood waters are channeled to overflow drain systems in the streets.

There is a remnant plot of native prairie grasses on Peterson East called the Western Great Plains Grassland. This site is reminiscent of the vast areas of the American plains prior to the arrival of Euro-American explorers and settlers. However, due to BASH concerns this area is intermittently mowed, presumably to reduce the incidence of raptors foraging over the tallgrass prairie system. Mowing the grassland may result in a reduction of faunal species, such as the grasshopper sparrow, that may specifically seek the vegetative community for nesting, shelter, or foraging. In addition, construction in the area reduces the acreage of the Western Great Plains Grassland. Plans are in place, and currently being acted upon, to develop Peterson East.

Another mission-related impact to the resources is the dispersal and removal of wildlife through the BASH Program. However, flight safety is a primary concern at Colorado Springs Airport and Peterson AFB, and

the BASH Program has been developed to directly address and minimize aircraft/wildlife strike hazards. See Section 7.12, Bird/Wildlife Aircraft Strike Hazard, for a review of the BASH Program and its impacts.

2.4.4 Potential Future Impacts

Future construction on Peterson AFB is expected to reduce the amount of semi-improved and unimproved lands considerably. An Environmental Assessment (EA) for proposed construction on the installation for 2011-2016 has been completed (MACTEC Engineering and Consulting 2011). Comments and considerations on adverse impacts to wildlife habitat, loss of native grass areas and other considerations have been addressed in the EA. In the final analysis, a determination has been made that the proposed construction would result in negligible impacts to the area's natural resources (MACTEC Engineering and Consulting 2011).

2.4.5 Natural Resources Needed to Support the Military Mission

There are few aspects of the biotic environment that are needed to support Peterson AFB's core mission. Some elements of the living environment, such as bird life, flowers and trees, can generate and sustain an aesthetic appreciation of nature for the base's residents and workforce, which in turn can promote mental health in the population.

Of the physical environment, relatively level topography helps in the construction of infrastructure and supporting the installation's air support mission. Clean air and water are needed for the health of the workforce.

3.0 ENVIRONMENTAL MANAGEMENT SYSTEM

The AF environmental program adheres to the Environmental Management System (EMS) framework and it's Plan, Do, Check, Act cycle for ensuring mission success. Executive Order (EO) 13693, *Planning for Federal Sustainability in the Next Decade*, U.S. Department of Defense Instruction (DoDI) 4715.17, *Environmental Management Systems*, AFI 32-7001, *Environmental Management*, and international standard, ISO 14001:2004, 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 managing associated risks, and instilling a culture of continuous 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	Has overall responsibility for the operation and management of Peterson AFB.
AFCEC Natural Resources Media Manager/Subject Matter Expert (SME)/ Subject Matter Specialist (SMS)	Oversees program to assist regional AF installations in the implementation of Natural Resource Management Programs.

Office/Organization/Job Title (Listing is not in order of hierarchical responsibility)	**Installation Role/Responsibility Description**
Installation Natural Resources Manager/POC	Oversees the Natural Resources Management Program on Peterson AFB.
Installation Security Forces	Provides security and safety for Peterson AFB personnel.
Installation Unit Environmental Coordinators (UECs); see AFI 32-7001 for role description	Responsible for coordinating environmental actions in his/her functional area.
Installation Wildland Fire Program Manager	Acts as liaison to Wildland Fire Coordinator and manages wildland fire requirements.
Pest Manager	Oversees the Pest Management Program on Peterson AFB.
Range Operating Agency	Coordinates all range functions.
Conservation Law Enforcement Officer (CLEO)	N/A
NEPA/Environmental Impact Analysis Process (EIAP) Manager	Prepares and analyses NEPA documents and is responsible for the distribution of such documents to pertinent entities for their review.
National Oceanic and Atmospheric Administration (NOAA)/ National Marine Fisheries Service (NMFS)	N/A
US Forest Service	N/A
US Fish and Wildlife Service	Provides assistance in the implementation and management of the Peterson AFB Natural Resources Management Program.

5.0 TRAINING

AF 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

NRMs at Category I installations 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 School, Civil Engineer Corps Officers School (CECOS). See *http://www.netc.navy.mil/centers/csfe/cecos/* for CECOS course schedules and registration information. Other applicable environmental management courses are offered by the Air Force Institute of Technology (*http://www.afit.edu*), the National Conservation Training Center managed by the USFWS (*http://www.training.fws.gov*), and the Bureau of Land Management Training Center (*http://training.fws.gov*).

- Natural resource management personnel shall be encouraged to attain professional registration, certification, or licensing for their related fields, and may be allowed to attend appropriate national, regional, and state conferences and training courses.

- Individuals participating in the capture and handling of sick, injured, or nuisance wildlife should receive appropriate training, to include training that is mandatory to attain any required permits.
- The DoD supported publication Conserving Biodiversity on Military Lands -- A Handbook for Natural Resources Managers (http://dodbiodiversity.org) provides guidance, case studies and other information regarding the management of natural resources on DoD installations..

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

6.2 Reporting

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

Installation Supplement –Reporting

As a result of the many natural resources related surveys, inventories, and projects that have been conducted on Peterson AFB over the years, as well as the need for management guidance, several reports and plans have been developed that quantify natural resource elements and provide management strategies. A listing of those reports and plans can be found at Appendix D.

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

The USFWS assists Peterson AFB in the management of its natural resources. Peterson AFB has a long history of working cooperatively with the USFWS in the development and implementation of its Natural Resources Management Program. This coordination between the agencies is established under the authority of the Sikes Act, and carried out under a Statement of Work (SOW) assigning USFWS staff assistance support to Peterson AFB, Schriever AFB, and Cheyenne Mountain Air Force Station (Statement of Work: USFWS Staff Assistance to Peterson AFB Appendix). The services Peterson AFB procures from the USFWS under the SOW are as follow:

- Provide a staff member to assist in the maintenance and implementation of the Peterson AFB INRMP and Natural Resources Management Program.
- Provide technical assistance to Peterson AFB for the conservation, protection, and management of species listed under the auspices of the Endangered Species Act.
- Provide data and information within his/her area of expertise to help guide the NEPA process in assessing the impacts of proposed projects.
- Support migratory bird regulatory compliance at Peterson AFB with the Migratory Bird Treaty Act, Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, and DoD/FWS MOU to Promote the Conservation of Migratory Birds.
- Support initiatives to preserve the natural values of wetlands, while supporting the mission on Peterson AFB, in compliance with Executive Order 11990, Protection of Wetlands.
- Assist Peterson AFB with collecting, compiling, analyzing, and reporting data using the prescribed methodologies presented in the Department of Interior Natural Resource Damage Assessment (NRDA) Regulations.
- Support Peterson AFB's initiatives for the conservation, protection, and management of all fish and wildlife resources on the installation.
- Assist Peterson AFB with the development and facilitation of local partnerships for conservation initiatives and the installation's mission objectives.

The Chief of Installation Management Flight, 21 CES, has overall responsibility for the Natural Resource Management Program on Peterson AFB, in conjunction with the other programs within the Environmental Program. The USFWS Wildlife Biologist, who works primarily with the Installation Support Team (IST), and the Peterson AFB NRM cooperatively manage the Natural Resources Management Program, developing and implementing the goals, objectives, and projects as outlined in the INRMP, through coordination with intra- and interagency stakeholders.

Pest management issues on Peterson AFB are addressed by the installation Pest Management Control Office in Civil Engineering Operations (CEO), 21 CES/CEO. Noxious weed control is implemented through contractual means.

Most of the natural resource inventory work conducted on Peterson AFB is undertaken by the CNHP, under the direction of the Colorado State University, located in Fort Collins.

7.1 Fish and Wildlife Management

Applicability Statement

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

Program Overview/Current Management Practices

The faunal species found in natural areas on Peterson AFB are consistent with those found elsewhere in Colorado's short- and tallgrass prairie systems. However, space is limited and security fencing precludes larger mammals from accessing the site. Small mammals and herpetofauna can be found during survey efforts. Managing the natural areas for maintenance of native species is the best practice for survival of a healthy suite of floral and faunal communities.

Migratory birds are vulnerable to disturbance during the nesting season, which the USFWS Office of Migratory Birds considers to generally occur from early April to mid-July, depending upon the species and

geographic location (U.S. Fish and Wildlife Service 2011). However, the maximum period for nesting may occur from early February through late August. Tree removal on Peterson AFB should not occur during the period April 1 through August 31. If a tree must be removed for reasons such as safety, the Peterson AFB NRM should be consulted prior to the action.

In 2018 the USFWS changed its policy regarding incidental take of migratory birds, such that if an action results in the take of a migratory bird when the intent of that action was not the destruction of the bird, the agency or organization undertaking that action could not be held liable for a violation of the Migratory Bird Treaty Act (U.S. Fish and Wildlife Service 2018). However, the DoD has indicated that despite the USFWS determination regarding take of migratory birds, military elements should, "….continue to follow existing Department of Defense guidance designed to minimize – to the extent practicable and without diminishing the effectiveness of military readiness activities – the incidental take of migratory birds" (Office of the Assistant Secretary of Defense 2018).

The Colorado Natural Heritage Program is conducting a comprehensive biological resources inventory on Peterson AFB in FY17 through FY18, concentrating on the Peterson East area. This inventory will be repeated once every 10 years thereafter, as practical. Tracking the resources in such a manner will not only help document rare and unique species and biological communities, as well as invasive species, but over time will help identify changes within biological communities due to global warming.

7.2 Outdoor Recreation and Public Access to Natural Resources

Applicability Statement

This section applies to all AF installations that maintain an INRMP. Peterson AFB is required to implement this element.

Program Overview/Current Management Practices

With the exception of those visiting the Edward J. Peterson Museum or the golf course, the general public is not allowed access to the installation or to its recreation facilities. However, members of the public wishing to visit the museum or golf course still have to be cleared to enter the base. In accordance with AFI 32-7064, Section 17.2, Public Access to Air Force Land and Water Areas, public access is at the discretion of the installation's Wing Commander. Public access on Peterson AFB is restricted due to security reasons. Future changes in the public access policy will be reflected in updates to this INRMP.

In 2015, discussions were held with Morale, Welfare, and Recreation (MWR) staff on Peterson AFB to determine the feasibility of reinstating the recreational fishing program that was once implemented on base. It was decided that a fishing program was not warranted; however, the MWR staff felt that a one-time activity, such as a children's fishing derby, may be worth the effort. If MWR does want to host a fishing derby, such an event must be coordinated with all stakeholders including Safety.

AFI 32-7064, Chapter 11, Paragraph 11.3, permits off-road vehicles on Air Force installations that have the land resources to sustain this activity without damaging the installation's natural and cultural resources. Peterson AFB does not have the capacity to support off-road vehicle use because most of the installation is developed. An all terrain vehicle (ATV) training area was designated in an open area immediately west of the PAFB north gate. The proposed construction is included in the 5-Year Base Development Environmental Assessment (MACTEC Engineering and Consulting 2011). This area would be used for ATV training by licensed personnel from the 21 SW Security Forces and 21 CES Readiness Flight preparing for deployment or participating in emergency response training. The designation of one common use area would limit damage to plant communities, and soil erosion, to a specific site while allowing native

grasses to become established elsewhere. ATV use would be confined to the designated course area and installation perimeter road for security protection monitoring. All ATV training to date has reportedly been conducted on Fort Carson, however.

If ATV training is undertaken on Peterson AFB, the 21 CES NRM and the Water Quality Manager will monitor the training area to ensure proper measures are taken to minimize soil erosion from excessive use. As necessary, the NRM will coordinate with the Grounds Maintenance Manager to initiate vegetation improvements to stabilize the area and minimize soil erosion.

7.3 Conservation Law Enforcement

Applicability Statement

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

Program Overview/Current Management Practices

Peterson AFB does not have a commissioned wildlife law enforcement officer on either the Natural Resources or Security Forces staff. The installation has concurrent jurisdiction, whereby both state and federal officers have authority to enforce regulations on the site. Appropriate state or federal law enforcement authorities will be contacted and consulted should an incident occur that involves a violation of either agency's regulations. Security Forces personnel will generally take the lead in an incident on the base. Planned actions or projects that may impact species protected by legislation or treaty will be coordinated with the appropriate agency to ensure no violation or adverse impact to wildlife occurs. Because there is no hunting program on the base, incidents involving wildlife most often are related to wildlife conflict issues, e.g., vehicle/wildlife collisions, or comparable inadvertent interactions between wildlife and humans.

A feasibility study for the implementation of conservation law enforcement on Front Range Air Force Bases was completed in 2015, and concluded with the recommendation that permanent law enforcement positions be stationed at the U.S. Air Force Academy and F.E. Warren AFB (Center for Environmental Management of Military Lands 2015). It was further recommended that the Air Force Academy conservation law enforcement officer (CLEO) assist with the rare conservation law enforcement issues that may occur on nearby Air Force bases on an as-needed basis. Ultimately, however, it was felt that there was not enough need for conservation law enforcement on the bases to warrant creating a new position. Reasonable access to the base by federal and state conservation officers for the purpose of fish and wildlife law enforcement will be provided by the Commander, if necessary.

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

Applicability Statement

This section applies to AF installations that have threatened and endangered species on AF property. This section **IS NOT** applicable to Peterson AFB.

Program Overview/Current Management Practices

On-going surveys conducted by the CNHP have not detected Threatened and Endangered Species or critical habitat on Peterson AFB (Schuerman et al. 1997, Schorr and Abbott 2004, Sovell and Smith 2012, Sovell and Doyle *in prep*). A limited amount of sensitive habitat was documented on Peterson East by the CNHP in 2011 (Sovell and Smith 2012). The stand of xeric tallgrass prairie was evaluated and cited as potential

seasonal habitat for sensitive species such as grasshopper sparrows and ferruginous hawks, both of which have been documented on the base (Schorr and Abbott 2004, Sovell and Smith 2012). However, Peterson East is subject to intermittent mowing due to BASH concerns. This action in all likelihood reduces the attractiveness of the area to at least some of the sensitive species that would otherwise be found using the area.

The black-tailed prairie dog is considered a Species of Special Concern by the CPW (Colorado Parks and Wildlife 2017). Currently, there are no prairie dog colonies on the installation; however, there are active prairie dog colonies on lands adjacent to Peterson AFB that, unimpeded, could expand onto the base and cause damage to infrastructure or pose threats to human health and safety. A combined approach of habitat modification and exclusionary devices to deter movement of individuals or small groups on to the base has been relatively successful thus far.

The eastern boundary fence between Peterson AFB and sections of land owned by the Colorado Springs Airport has been modified in sequential steps over the past several years in an effort to deter prairie dogs from entering the base through or under the fence. This effort has been focused at specific locations depending on site specific conditions and the availability of funds. Modification of the boundary fence will continue in selected areas until other means of control or removal become necessary. The 21 CES NRM works closely with the 21 SW Safety Office to evaluate the success of exclusionary efforts, and to survey for movement of prairie dogs onto the base. In the event dispersing prairie dogs are detected on the base, prompt actions will be taken to remove them before they can become a safety or health risk. Lethal control of prairie dogs is considered the last option and will only be used when other feasible efforts are deemed unsuccessful or impractical.

In addition, the presence of prairie dogs on or near flying operations raises BASH concerns that must be considered when evaluating wildlife and land management programs in the vicinity of flight lines. Prairie dogs attract raptors, which pose significant BASH risks for both military and commercial aircraft in the area. BASH will play a considerable role in any decisions to accept or remove prairie dogs from Peterson AFB.

As indicated in Section 2.1.1, Location and Area, Peterson AFB has recently acquired the area above Peterson East, referred to as Peterson East Extension. Prairie dogs and, during nesting season, burrowing owls currently occupy the area. Prior to development threatened and endangered species surveys will be conducted on the property. In addition, prairie dog control will be implemented to clear the area for development. If undertaken during a non-nesting period, burrowing owls will not be impacted by control actions.

As noted in section 2.3.4, pollinator populations have been declining worldwide during the past several years. In 2017 the U.S. Air Force Pollinator Conservation Strategy and Reference Guide (U.S. Fish and Wildlife Service 2017) was published to help guide pollinator management on Air Force lands. Five goals and objectives were identified in the document:

- conserve pollinator species of conservation concern.
- conserve and enhance pollinator habitat.
- reduce pesticide use and adverse impacts of pest control on pollinators.
- promote pollinator conservation through education and outreach.
- develop partnerships for pollinator conservation off-installation to lessen regulatory burdens resulting from federal listing processes.

The above goals and objectives are intended to be carried out through implementation of respective installation INRMPs.

Open areas around the built environment on Peterson AFB, for example Peterson East, generally host native vegetative communities. Furthermore, land restoration practices following soil disturbing operations call for revegetation with native species. However, recommended seed mixes will be reviewed to determine if pollinator friendly plant species can/should be added to the prescriptions. In addition, a review of ornamental species planted within the built environment should be undertaken to assess whether or not the proportion of pollinator friendly species can be improved upon, if not prioritized. To support the above actions, a memorandum from the DoD was developed in 2014 directing Military Departments to use pollinator friendly management prescriptions in the management of resources on military installations (Office of the Under Secretary of Defense 2014). Policies outlined include the use of native landscaping and minimizing the use of pesticides in sensitive habitats to the extent practicable and coordinating with other agencies when appropriate and feasible in matters pertaining to habitat and pollinator management.

7.5 Water Resource Protection

Applicability Statement

This section applies to AF installations that have water resources. This section **IS** applicable to Peterson AFB.

Program Overview/Current Management Practices

The major use of surface water in the vicinity of Peterson AFB is for irrigation. Senior water rights for Fountain Creek downstream of Colorado Springs claim approximately the mean annual volume of the stream. The other important and growing use is for industrial and municipal water, especially for the city of Colorado Springs, which is the source of water used at Peterson AFB. Most of the potable water used in El Paso County is from surface water sources that are both within and outside the county.

Most of the groundwater used is from the alluvial aquifers, which are used for municipal water by several small towns south of Colorado Springs and for irrigation by area agricultural operations. Water yields from the Laramie-Fox Hills aquifer are low and this aquifer has not yet been used extensively.

Ground and surface water quality generally reflect the physical and chemical differences in the aquifer sediments and surface soils. Soils and alluvium derived from upland granite, sandstone, limestone, and shale differ from soils derived from lowland Denver Basin Formations. Principal cations in the alluvial ground water are calcium and sodium while anions include fluoride, sulfate, bicarbonate and, locally, nitrate that may be derived from the Pierre Shale. The Laramie-Fox Hills aquifer also has high sodium and bicarbonate ions, with elevated sulfate and iron in some areas.

Peterson AFB is in the lower Fountain Water Quality Management Area. However, the base discharges into Colorado Springs utilities and does not discharge wastewater directly into any stream. Most of the storm water from Peterson AFB flows into golf course Pond #3. Only in the northwest corner of the base does storm water flow, via three outfalls, into the East Fork of Sand Creek.

7.6 Wetland Protection

Applicability Statement

This section applies to AF installations that have existing wetlands on AF property. This section **IS** applicable to Peterson AFB.

Program Overview/Current Management Practices

There are no jurisdictional wetlands on Peterson AFB per the USACE (see section 2.3.5 – Wetlands and Floodplains). However, there are three ponds within the confines of the golf course, as indicated on a National Wetlands Inventory map for the area. Although these bodies of water provide little to no aquatic or emergent vegetation, the water itself can serve as an attractant for waterfowl. The proximity of the golf course and ponds to the flight line may contribute to BASH conflicts, but there are no plans at this time to remove the ponds. In addition, as indicated in the Wetlands and Floodplains section, there is a small manmade wetland, as evidenced by hydric plant life, on Peterson East, created and supported by a runoff drainage pipe from nearby parking lots.

7.7 Grounds Maintenance

Applicability Statement

This section applies to AF installations that perform ground maintenance activities that could impact natural resources. This section **IS** applicable to Peterson AFB.

Program Overview/Current Management Practices

The base has traditionally had one overall philosophy regarding landscape design. This philosophy has been based upon creating a well-landscaped image commensurate with a major Air Force Headquarters installation, while adhering to xeriscaping principles. The naturally flat topography on the built-up portions of the base, called "Peterson Main", has allowed and encouraged the urban fabric to develop into one large, cohesive area. Landscaping was used effectively as an overall visual unifier, particularly through the consistent use of turf grasses and rocky ground cover. The use of trees and shrubs has been less consistent over the entire area of Peterson Main. However, the overall visual effect of a pleasantly landscaped area was promoted, contrasting sharply with the predominantly dry prairie grasses of adjacent open native lands. Due to the mature built-up nature of Peterson Main, one area of design that can make the most visible improvements is landscaping. The oasis landscape philosophy must be continued for the entire Peterson Main complex, including the Headquarters, Triangle Area, West Gate, industrial, southwest, central, golf course, family housing, and historical areas.

The only character area not located on Peterson Main is Peterson East. This area is east of and physically remote from Peterson Main. The area was acquired to accommodate future expansion. The overall design philosophy established for Peterson East is "New Mission – New Image", reflecting the fact that most facilities to be sited there will be space mission oriented, rather than aircraft oriented as with a traditional "Air Force base".

This new image for the Peterson East Character Area is also to be used in conjunction with landscaping design. A new philosophy was initiated to accommodate and support a new image, that being a compromise between the greener image of Peterson Main and the dry, natural character of the prairie. With this approach, irrigated landscape needs to occur minimally but effectively to provide a visual contrast to the naturally hilly topography and native grasses. Such focal areas need to be located along streets and pedestrian paths, adjacent all parking areas, and adjacent all buildings, especially near building entrances. These locations are most frequented by people using the base; thus providing landscaping in these areas will establish a higher visibility factor. Other areas not located within these focal areas must use indigenous grasses and earth forms to transition into the natural grass covered hills found on Peterson East.

7.8 Forest Management

Applicability Statement

This section applies to AF installations that maintain forested land on AF property. This section **IS** applicable to Peterson AFB.

Program Overview/Current Management Practices

Peterson AFB has no commercial forests as defined in AFI 32-7064, Chapter 9, Forest Management. The 21 CES NRM at Peterson AFB provides technical support to grounds maintenance in the implementation of the Urban Forestry Program. The purpose of the Urban Forestry Program at Peterson AFB is to develop an aesthetically pleasing environment, help cool the urban environment through an established tree-planting program, and contribute to natural resource education. Trees are used as part of the design elements in the landscaping of new buildings planned for the installation. Trees are a crucial element of any project design prepared by a landscape architect.

Peterson AFB recognizes the value of an urban forest and the need to protect and effectively manage it on this installation.

The Urban Forestry Management Plan goals include:

1. Achieve and maintain a sustainable Urban Forestry Program by replacing all cut or removed trees on a one-for-one basis.
2. Continue partnerships within the Tree City USA Program.

To ensure sustainability of the urban forest, all removed trees must be replaced on a one-to-one basis. With the Grounds Maintenance Contractor, a determination will be made if a tree is still viable for replanting when its entire intact root system is exposed. If the removed tree is on the approved species list (Approved Trees and Shrubs for Landscape Planting Appendix), then it will be replaced in kind. If not, it will be replaced with an approved species that fits the landscape design, safety, and anti-terrorist requirements. If the current location is available and suitable, the tree will be restocked in place. If the current location is not feasible, then coordination will be made with the Base Landscape Architect to determine an alternate suitable location. All disease/fungi free trees shall be chipped and used for landscaping mulch. Currently ponderosa pine (*Pinus ponderosa*) dominates the conifer species. Monoculture settings have a greater potential for diseases and insect infestations. Conifer species diversity may be achieved when replanting to provide an equal mix of ponderosa pine, Colorado blue spruce (*Picea pungens*), lodgepole pine (*Pinus contorta*), and Douglas-fir (*Pseudotsuga menziesii*) to reduce the potential for entire stand's mortality. A list of Facilities' Excellence Board and Safety approved replacement tree/shrub species can be found in the Approved Trees and Shrubs for Landscape Planting Appendix.

Based on a 2003 invasive species survey (Anderson et al. 2003), Russian-olive trees covered 5.62 acres on Peterson AFB at that time, with 89 individual trees. Some of those trees have been removed, but there are still several Russian-olives on the base. Russian-olive is a B-listed Colorado State Noxious Weed (Colorado Department of Agriculture 2017). These weed species are recognized as prioritized noxious weeds for Colorado, causing widespread and significant impact to Colorado's economy. A program aimed at removing the Russian-olives from Peterson AFB will be initiated in the coming years.

Tree removal during nesting season may result in a violation of the Migratory Bird Treaty Act. See Section 7.1, *Fish and Wildlife Management*, for guidance on the timing of tree removal to avoid the disturbance of nesting birds.

While the 1997 Urban Forestry Plan established a vision for the Urban Forestry Program, the day-to-day implementation of that vision is managed through extensive electronic databases and maps that document and track all trees and other important plantings at Peterson AFB. These data are kept by the Grounds Manager (21 CES/CEO).

The urban forest at Peterson AFB has a moderate degree of variety. This variety is the result of a thorough grounds maintenance program including pruning, irrigation, and pest treatment when required, for all trees on the installation. The overall exterior appearance of the installation greatly benefits from this program.

Peterson AFB has a very robust Urban Forestry Program. The base has been awarded Tree City USA recognition from the National Arbor Day Foundation every year from 1994 to 2017. The Tree City USA program receives 21 SW and Headquarters AFSPC support and every effort will be made to maintain participation in the program in the coming years.

7.9 Wildland Fire Management

Applicability Statement

This section applies to AF installations with unimproved lands that present a wildfire hazard and/or installations that utilize prescribed burns as a land management tool. This section **IS NOT** applicable to Peterson AFB.

Program Overview/Current Management Practices

The AF Wildland Fire Center determined Peterson AFB requires a Tier 3 Wildland Fire Management Plan. The Base Fire Department is OPR for writing the plan in accordance with the WFC Tier 3 template. In the interim, the installation maintains a policy memo that historically exempted it from have a Wildland Fire Management Plan (See Appendix F – Wildland Fire Policy Letter.)

There is an ongoing initiative for the Peterson AFB Fire Department staff to coordinate with other fire fighting groups and become more involved with regional wildland fire control. They have the capability to provide support to firefighters who are responsible for off-base properties, and stand ready to assist if requested.

7.10 Agricultural Outleasing

Applicability Statement

This section applies to AF installations that lease eligible AF land for agricultural purposes. This section **IS NOT** applicable to Peterson AFB.

Program Overview/Current Management Practices

There are no agricultural outleases, as defined in AFI 32-7064, on Peterson AFB.

7.11 Integrated Pest Management Program

Applicability Statement

This section applies to AF installations that perform pest management activities in support of natural resources management, e.g. invasive species, forest pests, etc. This section **IS** applicable to Peterson AFB.

Program Overview/Current Management Practices

In 2011 a Commander's Guide on Invasive Species was developed to highlight the issue of invasive species on military reservations, describe impacts to military resources and mission resulting from the presence of invasive species, and provide an overview of the strategies many installations are employing to combat invasive species (Boice et al. 2011). In conclusion, the guide offered the following points to be considered when managing for invasive species:

- prevent new invasions and stop the expansion of established invaders.
- focus on the military mission; invasive species degrade the landscape, resulting in less realistic training scenarios.
- minimize harmful environmental impacts of management actions, such as harmful side effects of control actions.
- engage in partnerships to maximize control efforts.
- and conduct long-term monitoring to guard against the establishment of invasives, and/or the reinvasion of areas already treated.

The primary focus of pest management activities on Peterson AFB has involved noxious weed control and rabbit and small mammal control.

Concerning noxious weed control, Article 5.5-108 of Colorado Revised Statute (CRS) Title 35 defines three classes of noxious weeds within the state according to occurrence, threat level, and ease of control. The three weed classes are as follow:

List A, rare noxious weed species that are subject to eradication wherever detected statewide in order to protect neighboring lands and the state as a whole.

List B, noxious weed species with discrete statewide distributions that are subject to eradication, containment, or suppression in portions of the state designated by the commissioner in order to stop the continued spread of these species.

List C, widespread and well-established noxious weed species for which control is recommended but not required by the state, although local governing bodies may require management.

The Colorado Weed Management Association defines a fourth class, Watch List Species, as those non-native species that pose a potential threat to Colorado's agricultural productivity and/or environmental values (Colorado Department of Agriculture 2017).

In 2003 the CNHP conducted noxious weed surveys on Peterson AFB, and documented eleven noxious weed species on the installation (Anderson et al. 2003). One was a List A species, six were List B species, three were List C species, and one was on the Watch List.

In a 2011 CNHP survey for critical biological resources, only four B-list species were recorded: bouncingbet, Canada thistle, Russian-olive, and tamarisk (Sovell and Smith 2012). One C List species, field bindweed, was also documented.

CNHP returned to Peterson to conduct noxious weed surveys in 2014 (Rondeau and Lavender-Greenwell 2014). Ten species were recorded in this most recent effort. Two species, diffuse knapweed (*Centaurea diffusa*) and Dalmation toadflax (*Linaria dalmatica*), were not found in 2003. Three species documented in 2003, bull thistle (*Cirsium vulgare*), baby's breath (*Gypsophila paniculata*), and purple loosestrife (*Lythrum salicaria*; A-list), were not found in 2014. The noxious weeds found on Peterson AFB in 2003 and 2014 can be found on Table: Noxious weeds found on Peterson AFB in 2003 and 2014.

Noxious weed control in improved areas is accomplished primarily through mechanical and chemical treatment methods via the grounds maintenance contractor. Additional funding is allocated annually to the grounds maintenance contract for focused efforts in areas of high concentrations or newly noted populations of weeds. Noxious weed control in semi-improved and unimproved areas is implemented by contract following noxious weed surveys. The results of the 2014 noxious weed surveys have been provided to the Peterson AFB Office of Pest Management.

A biological control program aimed at reducing field bindweed populations on Peterson AFB was implemented in 2006 and again in 2010 (Michels et al. 2010). The project was conducted by Texas AgriLife Research, a Cooperative Research Unit located in Bushland, Texas. Technicians introduced a mite, *Aceria malherbae*, to three bindweed populations on the base each year. Subsequent site visitations indicated that the mite introductions were effective in controlling bindweed, but no *A. malherbae* applications have been made since 2010.

In past years Russian-olive was planted as an ornamental, a windbreak, and a wildlife food source. Russian-olives can be found on Peterson AFB, some having been planted as ornamentals and others having naturally seeded from the planted trees. A program to remove these non-natives, a B-list noxious weed species, will be initiated in the coming years.

In 2017, approximately three acres of Canada thistle and diffuse knapweed were chemically treated on the southern end of Peterson East.

Numerous construction projects and related grounds disturbance events present optimum conditions for the introduction and infestation of noxious weeds. Prompt reseeding and stabilization of disturbed areas with certified seed mixtures procured from approved vendors greatly reduces the introduction of noxious weeds onto the base. Primary oversight of this effort is by the Grounds Maintenance Manager.

The Pest Management Office also gets involved with reducing rabbit and rodent populations when those pests are found to be destroying the wiring in vehicles and infrastructure utilities. The coating on wiring was once made of petroleum-based plastic materials, but in recent years a switch to more environmentally friendly soy-based products has been made. Rabbits and rodents are attracted to the new edible coatings and have caused thousands of dollars in damages to vehicles and utilities. When reports of damages soar, Pest Control takes steps to reduce rabbit and rodent populations. During the summer of 2017 the Peterson AFB Pest Management Control Office removed 50 cottontail rabbits from the improved areas of the installation.

Noxious weeds found on Peterson AFB in 2003[1] and 2014[2]

Common Name	Scientific Name	State Class	2003	2014
Purple Loosestrife	*Lythrum salicaria*	A	X	
Bouncingbet	*Saponaria officinalis*	B	X	X
Bull Thistle	*Cirsium vulgare*	B	X	
Canada Thistle	*Cirsium arvense*	B	X	X
Dalmation Toadflax	*Linaria dalmatica*	B		X
Diffuse Knapweed	*Centaurea diffusa*	B		X
Russian-olive	*Elaeagnus angustifolia*	B	X	X
Tamarisk	*Tamarix ramosissima*	B	X	X
Yellow Toadflax	*Linaria vulgaris*	B	X	X
Common St. Johnswort	*Hypericum perforatum*	C	X	X
Field Bindweed	*Convolvulus arvensis*	C	X	X
Puncturevine	*Tribulus terrestris*	C	X	X
Baby's Breath	*Gypsophila paniculata*	WL	X	

[1]Anderson et al. 2003
[2] Rondeau and Lavender-Greenwell 2014

7.12 Bird/Wildlife Aircraft Strike Hazard (BASH)

Applicability Statement

This section applies to AF installations that maintain a BASH program to prevent and reduce wildlife-related hazards to aircraft operations. This section **IS** applicable to Peterson AFB.

Program Overview/Current Management Practices

Peterson AFB has entered into a contract to fund a biologist from the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) to work exclusively on control of wildlife that might pose a strike hazard to military and civilian aircraft. The work conducted by the biologist is coordinated with the Bird Hazard Working Group. The primary efforts of the APHIS employee have been focused on reducing the presence of Canada geese (*Branta canadensis*) on the shared-use airfield. Coordinated efforts have been made to harass the geese to prevent them from becoming overly accustomed to feeding and nesting on the installation. The main attractions for the geese are the open bodies of water on the golf course combined with the non-native irrigated grasses on the fairways and greens. Maintaining the golf course and associated ponds adjacent to flight lines potentially contributes to the threat of BASH occurrences. The 21 CES NRM is a member of the Bird Hazard Working Group and provides input and technical support to the committee as needed.

The 21 SW/SEF, Colorado Springs Airport, and APHIS have coordinated with the USFWS to obtain a permit to depredate migratory birds deemed a threat to flight safety on the Colorado Springs Airport and Peterson AFB (Migratory Birds Depredation Permit Appendix). Canada geese have been removed from

Peterson AFB and the airport in limited numbers. Peterson AFB manages the challenge of maintaining a recreational golf course to which geese may be attracted, while at the same time requesting an annual depredation permit from the U.S. Fish and Wildlife Service for removing geese in the vicinity of the adjacent flight line. However, in accordance with 50 CFR 21.41, Standard Conditions – Migratory Bird Depredation Permits, permittees are required to use non-lethal methods of harassment in conjunction with lethal control of problem birds. Finally, in 2016 the APHIS Biologist successfully prevented swallows from nesting on the bridge outside of the installation's west entry gate through the use of nest deterrence spikes. This bridge is directly in line with the westernmost flight line and swallows nesting on it can be in direct conflict with flight traffic.

Prairie dogs have also been removed from the airfield and adjacent areas due to their potential to indirectly cause BASH incidents. Prairie dogs attract raptors and mammalian predators that can pose a hazard to flight operations. Therefore, prairie dogs are removed from the area when their presence creates a potential BASH risk. Furthermore, the removal of coyotes (*Canis latrans*), foxes (*Vulpes* spp.), raccoons (*Procyon lotor*), and skunks (*Mephitis mephitis*) with the use of traps, otherwise prohibited by state law 33-6-201 Colorado Revised Statutes (CRS), has been approved by the Colorado Department of Public Health and Environment (CDPHE) (Letter of Approval for Use of Prohibited Devices for the Taking of Wildlife Appendix).

Aircraft bird strike incidents have been variable over the past few years; see the following table for bird strike data. The APHIS biologist dispersed 3,340 birds of 27 species during CY18, and lethally removed 642 individuals of 31 bird and mammal species during that same period. The species subject to control efforts include: cottontail rabbit, meadowlark, striped skunk, western kingbird, black-tailed jackrabbit, rock dove, killdeer, American crow, red-tailed hawk, mallard, common raven, Canada goose, coyote, kestrel, red fox, and turkey vulture. It should be noted that the majority of animals dispersed or lethally removed from the area were not found on Peterson AFB, but on adjacent Colorado Springs Airport properties.

A revised Peterson AFB BASH Plan was completed in November, 2017.

Aircraft Bird Strike Data, CY15-CY18

	CY15	CY16	CY17	CY18
Military	17	5	4	6
Civilian	45	23	39	53
Total	62	28	43	59

7.13 Coastal Zone and Marine Resources Management

Applicability Statement

This section applies to AF installations that are located along coasts and/or within coastal management zones. This section **IS NOT** applicable to Peterson AFB.

Program Overview/Current Management Practices

Peterson AFB has no coastal connections. Chapter 6—Coastal and Marine Resources, found in AFI 32-7064, is not applicable to the installation.

7.14 Cultural Resources Protection

Applicability Statement

This section applies to AF installations that have cultural resources that may be impacted by natural resource management activities. This section **IS** applicable to Peterson AFB.

Program Overview/Current Management Practices

If ground disturbing activities during the course of implementing a natural resource project result in the inadvertent discovery of cultural materials or human remains, all activity in that area will cease immediately until the significance of the discovery can be determined, and an appropriate decision can be made to resolve any conflicts associated with the find. See the Peterson AFB Integrated Cultural Resources Management Plan (ICRMP) for more information on cultural resources management and protection.

7.15 Public Outreach

Applicability Statement

This section applies to all AF installations that maintain an INRMP. Peterson AFB is required to implement this element.

Program Overview/Current Management Practices

Public access to Peterson AFB is restricted, requiring scheduled visitors to sign in at the main gate with photo identification and proof of vehicle registration and insurance. However, developing outreach programs for military personnel and the general public is a high priority at the installation as long as such programs can be accomplished within military mission constraints.

Peterson AFB hosts Arbor Day festivities each year, promoting native species, xeriscape landscaping, and water conservation. Additional events could be planned in coordination with ribbon-cutting ceremonies for new construction or anniversaries of the installation's commission. Interpretive signs along the jogging trail would also facilitate education regarding the native ecosystems and associated species. For the public at large, outreach opportunities include dissemination of natural resources management information via the base's website or the local media.

7.16 Geographic Information Systems (GIS)

Applicability Statement

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

Program Overview/Current Management Practices

Geographic Information Systems (GIS) are important tools in ecosystem management and environmental planning activities. Installations using GIS shall maintain mission data sets (MDSs) and respective mission data layers (MDLs) in compliance with Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE); all spatial data (surveys, inventories, and mapping) acquired via contract shall be incorporated into the installation GIS. Deliverables shall be Environmental Systems Research Institute Inc. (ESRI) compatible.

Data Layers. Installations shall maintain the following data layers as applicable to the installation:

- Wetlands Inventory
- Digital Elevation Models (DEM) and/or Topographic Contour Maps

- 100-year Floodplains (Federal Emergency Management Agency [FEMA] or DEM)
- Threatened and Endangered Species Occurrences
- Land Use Categories (improved, semi-improved, and unimproved)
- Watershed and Sub-unit Boundaries
- Soil Types
- Vegetative Cover
- Outdoor Recreation Areas (Classes I, II, and III)

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 AF 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 1: CONTROL NATIVE AND NON-NATIVE INVASIVE SPECIES.

- Objective 1.1: As necessary, control black-tailed prairie dog expansion onto Peterson AFB.
    - Project 1.1.1: Monitor the installation boundaries for expansion onto the base by prairie dogs from adjacent properties.
    - Project 1.1.2: Retrofit boundary fences near off-site prairie dog colonies with exclusionary devices to deter prairie dog expansion onto the installation.
    - Project 1.1.3: Remove prairie dogs that have expanded onto Peterson AFB from adjacent properties. If practical, nonlethal methods of removal will be attempted first. If these methods are unsuccessful, or if nonlethal removal is not feasible, lethal means of removal will be employed.
- Objective 1.2: As necessary, control noxious weeds on Peterson AFB.
    - Project 1.2.1: Conduct installation-wide surveys for A-, B-, and C-listed noxious weeds.
    - Project 1.2.2: Implement weed control measures on those weeds found, targeting especially A- and B-listed species.

GOAL 2: INVENTORY AND MONITOR BIOLOGICAL RESOURCES

- Objective 2.1: Inventory and monitor biological resources to document unique and rare species and biological communities, and well as track changes in those communities due to climate change.
    - Project 2.1.1: Conduct comprehensive biological inventories in FY17 and once every 10 years thereafter.
    - Project 2.1.2: Conduct surveys, monitoring, and management actions, if necessary, to protect sensitive/rare floral and faunal species.

GOAL 3: MAINTAIN THE STATUS OF THE PETERSON AFB INRMP

- Objective 3.1: Review and update the Peterson AFB INRMP annually, as necessary.
    - Project 3.1.1: Update the INRMP annually.
    - Project 3.1.2: Review the INRMP annually in coordination with the USFWS and CPW.

9.0 INRMP IMPLEMENTATION, UPDATE, AND REVISION PROCESS

9.1 Natural Resources Management Staffing and Implementation

The INRMP reflects the commitment set forth by Peterson AFB to conserve, protect and enhance the natural resources on the installation. An ecosystem approach was used to develop the management measures for the base. Implementation of the management measures will maintain, conserve, and enhance the ecological integrity of the base and the biological communities found on site. In addition, the natural resources management measures described in the INRMP will protect the Peterson AFB ecosystems and their components from unacceptable degradation and identify and restore previously degraded habitat areas.

The Natural Resources Management Program is closely coordinated with other agencies/divisions on the base that overlap with their respective missions. The 21 CES NRM consults regularly with the Security Forces personnel, 21 SW SEF staff, Pest Control staff, and the Grounds Maintenance Supervisor to reduce the incidents of wildlife conflicts, control noxious weeds, and enhance public safety on the base. This coordinated approach improves communication among the various organizations and allows them to access expertise that may not be readily available in their respective agencies.

9.2 Monitoring INRMP Implementation

The primary organization responsible for implementation of the INRMP is 21 CES. The NRM will generally oversee management of the Natural Resources Program, coordinating with several other offices within 21 CES as necessary to successfully implement the plan. For example, the Office of Pest Management addresses issues of concern relating to noxious weeds and other invasive species. Grounds Maintenance staff manages the urban landscaping and forest components of the installation's environment. Air and water quality managers monitor and address issues concerning their respective areas of expertise. Other 21 CES offices will be called upon for their expertise as needs arise.

The AFCEC IST assists Peterson AFB and other AFBs in the region in implementing their respective natural resource management programs. Project scheduling and funding is coordinated through the IST.

In addition, the IST provides technical assistance as needed on the installations, for example supporting a GIS position to make available GIS products as needed.

Through a 2012 Interagency Assistance Agreement between the USFWS and the AF, and in association with a 2013 Statement of Work (Appendix D), the USFWS provides a NRM to assist with the management of natural resources as necessary. This position oversees implementation of certain environmental programs and projects, and maintains and updates the INRMP, or revises it as needed. In coordination with the Peterson AFB NRM, the USFWS NRM coordinates and conducts an annual review of the INRMP by the Sikes Act cooperators, those being the USFWS, CPW, and Peterson AFB.

9.3 Annual INRMP Review and Update Requirements

In conjunction with the Sikes Act cooperators, the NRM will conduct annual reviews to evaluate the progress of INRMP implementation and to make recommendations on how management actions need to be adjusted to improve the efficiency and effectiveness of the plan. Components will include the review of all Air Force goals/objectives/projects, monitoring data, undertakings that require submission of Air Force Forms 332 (Civil Engineer Work Request) or 813 (Request for Environmental Impact Analysis), and stakeholder involvement activities.

A critical consideration is to ensure that there is no net loss of military capability as a result of implementing the INRMP. Specifically, this evaluation will require careful examination of management objectives from which annual projects are developed. There may be instances in which a "net loss" may be unavoidable in order to fulfill regulatory requirements other than the Sikes Act (e.g., complying with a biological opinion under the provisions of the Endangered Species Act). Loss of mission capability in these instances will be identified in the INRMP and a discussion included of measures taken to recapture or mitigate the net loss. Major revisions to the INRMP and/or the management program will necessitate a full review by all parties signatory to the plan.

These annual reviews will help keep the INRMP current and relevant with the incorporation of new projects, additional data, new understanding of natural processes and species, knowledge of other base operations impacting natural resources, and lessons learned from completed and ongoing projects.

In accordance with paragraph 2.(3) of Enclosure 3 of DoD Manual 4715.03, Integrated Natural Resource Management Plan (INRMP) Implementation Manual, Peterson AFB will also communicate annually with the USFWS and CPW regarding implementation of the INRMP during the past year, areas for improvement, as well as plans for future projects. This coordination can be undertaken in writing and is not considered a full review of the plan which is required at least once every five years.

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 AF 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 Air Force 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 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 on Invasive Species. However, the INRMP signatories would not contend that the INRMP is not be implemented if not accomplished within 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 support long-term compliance with specific requirements within natural resources law; but is not directly tied to specific compliance within the proposed year of execution.

FY18 Projects

Project	Priority	Funding Source	OPR
Project 1.1.1: Monitor installation boundaries for prairie dog access.	Low	In house	USFWS
Project 1.2.2: Conduct noxious weed control.	Medium	Project TDKAOS100718	USFWS
Project 2.1.1: Conduct comprehensive biological inventories.	High	Project TDKA6111517	USFWS
Project 3.1.1: Update the INRMP annually.	High	In house	USFWS
Project 3.1.2: Review the INRMP annually in coordination with the USFWS and CPW.	High	In house	USFWS

FY19 Projects

Project	Priority	Funding Source	OPR
Project 1.1.1: Monitor installation boundaries for prairie dog access.	Low	In house	USFWS
Project 1.2.1: Conduct noxious weed surveys.	Medium	Project TDKAOS100919	USFWS
Project 1.2.2: Conduct noxious weed control.	Medium	Project TDKAOS100719	USFWS
Project 3.1.1: Update the INRMP annually.	High	In house	USFWS
Project 3.1.2: Review the INRMP annually in coordination with the USFWS and CPW.	High	In house	USFWS

FY20 Projects

Project	Priority	Funding Source	OPR
Project 1.1.1: Monitor installation boundaries for prairie dog access.	Low	In house	USFWS
Project 1.2.2: Conduct noxious weed control.	Medium	Project TDKAOS100720	USFWS
Project 2.1.2: Conduct surveys, monitoring, and management actions, if necessary, to protect sensitive/rare floral and faunal species.	Medium	Project TDKA401120	USFWS
Project 3.1.1: Update the INRMP annually.	High	In house	USFWS
Project 3.1.2: Review the INRMP annually in coordination with the USFWS and CPW.	High	In house	USFWS

FY21 Projects

Project	Priority	Funding Source	OPR
Project 1.1.1: Monitor installation boundaries for prairie dog access.	Low	In house	USFWS
Project 1.2.2: Conduct noxious weed control.	Medium	Project TDKAOS100721	USFWS
Project 2.1.2: Conduct surveys, monitoring, and management actions, if necessary, to protect sensitive/rare floral and faunal species.	Medium	Project TDKA401121	USFWS
Project 3.1.1: Update the INRMP annually.	High	In house	USFWS
Project 3.1.2: Review the INRMP annually in coordination with the USFWS and CPW.	High	In house	USFWS

FY22 Projects

Project	Priority	Funding Source	OPR
Project 1.1.1: Monitor installation boundaries for prairie dog access.	Low	In house	USFWS
Project 1.2.2: Conduct noxious weed control.	Medium	Project TDKAOS100722	USFWS
Project 2.1.2: Conduct surveys, monitoring, and management actions, if necessary, to protect sensitive/rare floral and faunal species.	Medium	Project TDKA401122	USFWS
Project 3.1.1: Update the INRMP annually.	High	In house	USFWS
Project 3.1.2: Review the INRMP annually in coordination with the USFWS and CPW.	High	In house	USFWS

11.0 REFERENCES

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

1. AFI 32-7064, *Integrated Natural Resources Management*
2. Sikes Act
3. eDASH Natural Resources Program Page
4. Natural Resources Playbook – a Internal AF reference available at https://cs1.eis.af.mil/sites/ceportal/CEPlaybooks/NRM2/Pages/

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12.0 ACRONYMS

12.1 Standard Acronyms (Applicable to all AF installations)

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

12.2 Installation Acronyms

- **ADAG** - Arrival/Departure Airfield Control Group
- **AETC** - Air Education and Training Command
- **AFB** - Air Force Base
- **AFCEC** - Air Force Civil Engineer Center

- **AFMC** - Air Force Material Command
- **AFOTEC** - Air Force Operational Testing and Evaluation Center
- **AFS** - Air Force Station
- **AFSPC** - Air Force Space Command
- **ARSTRAT** - Army Forces Strategic Command
- **BCR** - Bird Conservation Region
- **CDPHE** - Colorado Department of Public Health and Environment
- **CEO** - Civil Engineering Operations
- **CES** - Civil Engineer Squadron
- **CISF** - Consolidated Integrated Support Facility
- **CPW** - Colorado Parks and Wildlife
- **CRS** - Colorado Revised Statutes
- **IST** - Installation Support Team
- **MAFFS** - Modular Aerial Fire Fighting System
- **MDL** - mission data layer
- **MDS** - mission data set
- **NORAD** - North American Aerospace Defense Command
- **PCA** - Potential Conservation Area
- **PIF** - Partners in Flight
- **PROTU** - Photo Reconnaissance Operational Training Unit
- **SAC** - Strategic Air Command
- **SEF** - Flight Safety Office
- **SGCN** - Species of Greatest Conservation Need
- **SMDC** - Space and Missile Defense Command
- **SVS** - Services Squadron
- **TVC** - Terra Vista Community
- **USSPACECOM** - United States Space Command

13.0 DEFINITIONS

13.1 Standard Definitions (Applicable to all AF installations)

- Natural Resources Playbook – Definitions Section

13.2 Installation Definitions

- Add unique state, local and installation-specific definitions

14.0 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 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

Federal Public Laws and Executive Orders	
	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 U.S. Fish and Wildlife Service (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) of 1980 (Superfund) (26 U.S.C. § 4611–4682, P.L. 96-510, 94 Stat. 2797), as amended	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 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

Federal Public Laws and Executive Orders	
	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.
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 Public Laws and Executive Orders	
	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.
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 Integrated Natural Resources Management Plan and public access to natural resources, and allows collection of nominal hunting and fishing fees. NOTE: AFI 32-7064 sec 3.9. 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

Federal Public Laws and Executive Orders	
	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 Improvement Act Amendments: Supplemental Guidance Concerning INRMP Reviews	Emphasizes implementing and improving the overall INRMP coordination process. Provides policy on scope of INRMP review, and public comment on INRMP review.
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

Federal Public Laws and Executive Orders	
	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 AFI 32-7061, Environmental Impact Analysis Process	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.
AFI 32-7062, Air Force Comprehensive Planning	Provides guidance and responsibilities related to the USAF comprehensive planning process on all USAF-controlled lands.
AFI 32-7064, Integrated Natural Resources Management	Implements AFPD 32-70, Environmental Quality; 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.
AFI 32-7065, Cultural Resources Management	This instruction 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 Quality	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.

Appendix B. Plant and Animal Species Documented on Peterson Air Force Base

Birds	
Common Name	***Scientific Name***
American coot	*Fulica americana*
American crow	*Corvus brachyrynchos*
American goldfinch	*Spinus tristis*
American kestrel	*Falco sparverious*
American magpie	*Pica hudsonia*
American robin	*Turdus migratorius*
American wigeon	*Anas americana*
Barn swallow	*Hirundo rustica*
Black-capped chickadee	*Poecile atricapillus*
Blue jay	*Cyanocitta cristata*
Brewer's blackbird	*Euphagus cyanocephalus*
Brown-headed cowbird	*Molothrus ater*
Bullock's oriole	*Icterus bullocki*
Chipping sparrow	*Spizella passerina*
Cliff swallow	*Petrochelidon pyrrhonota*
Common grackle	*Quiscalus quiscula*
Common nighthawk	*Chordeiles minor*
Common raven	*Corvus corax*
Eastern kingbird	*Tyrannus tyrannus*
Eurasian collared-dove	*Streptopelia decaocto*
European starling	*Sturnus vulgaris*
Ferruginous hawk	*Buteo regalis*
Gadwall	*Anas strepera*
Grasshopper sparrow	*Ammodramus savannarum*
Great blue heron	*Ardea herodius*
Great horned owl	*Bubo virginianus*
Horned lark	*Eremophila alpestris*
House finch	*Haemorhous mexicanus*
House sparrow	*Passer domesticus*
House wren	*Troglodytes aedon*
Killdeer	*Charadrius vociferus*
Lark bunting	*Calamospiza melanocorys*
Lark sparrow	*Chondestes grammacus*
Lesser goldfinch	*Spinus psaltria*

Mallard	*Anas platyrhynchos*
Mourning dove	*Zenaida macroura*
Northern flicker	*Colaptes auratus*
Northern harrier (?)	*Circus cyaneus*
Northern rough-winged swallow	*Stelgidopteryx serripennis*
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius phoeniceus*
Rock pigeon	*Columbia livia*
Rough-legged hawk (?)	*Buteo lagopus*
Say's phoebe	*Sayornis saya*
Short-eared owl	*Asio flammeus*
Song sparrow	*Melospiza melodia*
Steller’s jay	*Cyanocitta stelleri*
Swainson’s hawk	*Buteo swainsoni*
Tree swallow	*Tachycineta bicolor*
Turkey vulture	*Cathartes aura*
Vesper sparrow	*Pooecetes gramineus*
Violet-green swallow	*Tachycineta thalassina*
Western kingbird	*Tyrannus verticalis*
Western meadowlark	*Sturnella neglecta*
Western screech-owl	*Megascops kennicottii*
White-breasted nuthatch	*Sitta carolinensis*
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*
Insects	
Ariane satyr	*Cercyonis pegale ariane*
Big-headed grasshopper	*Aulocara elliotti*
Cabbage white butterfly	*Pieris rapae*
Checkered white butterfly	*Pontia protodice*
Cloudless Sulphur butterfly	*Phoebis sennae*
Common checkered skipper butterfly	*Pyrgus communis*
Common wood-nymph butterfly	*Cercyonis pegala*
Damselfly	*Argia* spp.
Fiery skipper butterfly	*Hylephila phyleus*
Giant sulphur butterfly	*Colias gigantea*
Gorgone checkerspot butterfly	*Chlosyne gorgone*
Grasshoppers	Order Othoptera
Monarch butterfly	*Danaus plexippus*
Mourning cloak butterfly	*Nymphalis antiopa*
Northern blue butterfly	*Plebejus idas*

Orange sulpher butterfly	*Colias eurytheme*
Painted lady butterfly	*Vanessa cardui*
Pearl crescent butterfly	*Phyciodes tharos*
Pine white butterfly	*Neophasia menapia*
Reakirt's blue butterfly	*Echinargus Isola*
Ruddy copper butterfly	*Lycaena rubidus*
Silver-spotted skipper butterfly	*Epargyreus clarus*
Silvery blue butterfly	*Glaucopsyche lygdamus*
Twelve spotted skimmer dragonfly	*Libellula pulchella*
Variegated meadowhawk dragonfly	*Sympetrum corruptum*
Viceroy butterfly	*Limenitis archippus*
Western harvester ant	*Pogonomyrmex* spp.
Western pondhawk	*Erythemis collocata*
Western tiger swallowtail butterfly	*Papilio rutulus*
Mammals	
American badger	*Taxidea taxus*
Black-tailed jackrabbit	*Lepus californicus*
Black-tailed prairie dog	*Cynomys leudovicianus*
Coyote	*Canis latrans*
Deer mouse	*Peromyscus maniculatus*
Desert cottontail	*Sylvilagus audubonii*
Fox squirrel	*Sciurus niger*
Hispid cotton rat	*Sigmodon hispidus*
House mouse	*Mus musculus*
Long-tailed weasel	*Mustela frenata*
Meadow vole	*Microtus pennsylvanicus*
Mule deer	*Odocoileus hemionus*
Northern grasshopper mouse	*Onychomys leucogaster*
Northern pocket gopher	*Thomomys talpoides*
Northern raccoon	*Procyon lotor*
Ord's kangaroo rat	*Dipodomys ordii*
Plains harvest mouse	*Reithrodontomys montanus*
Plains pocket gopher	*Geomys bursarius*
Plains pocket mouse	*Perognathus flavescens*
Prairie vole	*Microtus ochrogaster*
Pronghorn	*Antilocapra americana*
Red fox	*Vulpes vulpes*
Silky pocket mouse	*Perognathus flavus*
Striped skunk	*Mephitis mephitis*

Thirteen-lined ground squirrel	*Ictidomys tridecemlineatus*
Virginia opossum	*Didelphis virginiana*
Western harvest mouse	*Reithrodontomys megalotis*
White-footed mouse	*Peromyscus leucopus*
Amphibians	
Woodhouse's toad	*Bufo woodhousii*
Reptiles	
Bullsnake/Gopher snake	*Pituophis catenifer*
Prairie lizard	*Sceloporus undulatus*
Western rattlesnake	*Crotalus viridis*
Western terrestrial garter snake	*Thamnophis elegans*

Plants – Native Species	
Scientific name	**Common name**
Abronia fragrans	fragrant sand-verbena
Achnatherum hymenoides	Indian ricegrass
Achnatherum robustum	sleepygrass
Aliciella pinnatifida	sticky gilia
Allium textile	textile onion
Amaranthus blitoides	mat amaranth
Ambrosia acanthicarpa	annual bursage
Ambrosia psilostachya	western ragweed
Ambrosia tomentosa	skeleton-leaf bursage
Ambrosia trifida var. *trifida*	great ragweed
Andropogon gerardii	big bluestem
Argemone polyanthemos	crested prickly-poppy
Aristida divaricata	poverty three-awn
Aristida purpurea	purple three-awn
Artemisia biennis var. *biennis*	biennial sagewort
Artemisia campestris	field sagewort
Artemisia campestris (Oligosporus pacificus)	field sagewort
Artemisia frigida	fringed sagebrush
Artemisia ludoviciana	Louisiana sagewort
Asclepias pumila	plains milkweed
Asclepias speciosa	showy milkweed
Astragalus agrestis	purple milkvetch
Bouteloua curtipendula	sideoats grama
Bouteloua dactyloides (Buchloë dactyloides)	buffalograss
Bouteloua gracilis	blue grama
Bouteloua hirsuta var. *hirsuta*	hairy grama
Brickellia eupatorioides	false boneset
Calamovilfa longifolia	prairie sandreed
Calylophus lavandulifolius	lavender-leaf sundrops
Calylophus serrulatus	yellow sundrops
Chamaesyce glyptosperma	ribseed sandmat
Chenopodium desiccatum	aridland goosefoot
Chenopodium pratericola	desert goosefoot
Chloris verticillata	tumble windmill grass
Cirsium canescens	prairie thistle
Cirsium ochrocentrum	yellowspine thistle
Cirsium undulatum	wavyleaf thistle
Comandra umbellata ssp. *pallida*	pale bastard toadflax
Cryptantha cineria var. *jamesii (Oreocarya suffruticosa)*	James' cryptantha

Cryptantha fendleri	sand-dune cryptantha
Cyclachaena xanthifolia	giant sumpweed
Cyperus schweinitzii	Schweintz's flatsedge
Dalea purpurea	purple prairie clover
Dyssodia papposa	fetid marigold
Elymus canadensis	Canada wildrye
Elymus elymoides	squirreltail
Engelmannia pinnatifida	Engelmann's daisy
Ericameria nauseosa	rubber rabbitbrush
Erigeron flagellaris	trailing daisy
Eriogonum annuum	annual wild buckwheat
Eriogonum effusum	spreading buckwheat
Euphorbia dentata	toothed spurge
Froelichia gracilis	slender snakecotton
Grindelia squarrosa	curlycup gumweed
Gutierrezia sarothrae	broom snakeweed
Helianthus annuus	common sunflower
Helianthus petiolaris	prairie sunflower
Hesperostipa comata	needle and thread
Heterotheca villosa	hairy false goldenaster
Hordeum jubatum	foxtail barley
Juncus interior	inland rush
Lepidium densiflorum	common pepperweed
Lesquerella montana	mountain bladderpod
Liatris punctata	dotted blazing star
Lupinus plattensis	Nebraska lupine
Lycurus setosus (Muhlenbergia alopecuroides)	bristly wolfstail
Machaeranthera bigelovii (Dieteria bigelovii)	Bigelow's tansy-aster
Machaeranthera pinnatifida (Xanthisma spinulosum)	spiny goldenweed
Mentzelia nuda	white-flowered blazingstar
Mertensia lanceolata	prairie bluebells
Mirabilis hirsuta	hairy four o'clock
Mirabilis linearis	narrowleaf four o'clock
Muhlenbergia montana	mountain muhly
Muhlenbergia racemosa	marsh muhly
Oenothera coronopifolia	crownleaf evening primrose
Oenothera curtifolia	velvetweed
Oenothera latifolia	pale evening primrose
Oenothera suffretescens	scarlet beeblossom/gaura
Oenothera villosa	hairy evening primrose
Opuntia fragilis	brittle prickly pear

Opuntia macrorhiza	western prickly pear
Oxytropis lambertii	purple locoweed
Packera tridenticulata	threetooth ragwort
Panicum capillare	witchgrass
Panicum virgatum	switchgrass
Pascopyrum smithii	western wheatgrass
Paspalum setaceum	thin paspalum
Penstemon albidus	white penstemon
Penstemon angustifolius	broadbeard penstemon
Physalis hispida	prairie ground cherry
Plantago patagonica	woolly plantain
Polanisia dodecandra ssp. *trachysperma*	Red whisker clammyweed
Polygonum douglasii	Douglas' knotweed
Populus deltoides ssp. *monilifera*	plains cottonwood
Potentilla paradoxa	bush cinquefoil
Prunus pumila var. *besseyi**	sand-cherry
Psoralidium tenuiflorum	slimflower scurfpea
Ratibida columnifera	prairie coneflower
Rorippa sinuata	spreading yellow-cress
Salix exigua	coyote/sandbar willow
Schedonnardus paniculatus	tumblegrass
Schizachyrium scoparium var. *scoparium*	little bluestem
Schoenoplectus tabernaemontani	softstem bulrush
Senecio spartioides	narrow-leaved butterweed
*Sorghastrum nutans***	Indian grass
Sphaeralcea coccinea	scarlet globemallow
Sporobolus airoides	alkali sacaton
Sporobolus cryptandrus	sand dropseed
Stephanomeria pauciflora	brownplume wire lettuce
Thelesperma filifolium var. *intermedium*	stiff greenthread
Thelesperma megapotamicum	Hopi tea greenthread
Tradescantia occidentalis	prairie spiderwort
Typha latifolia	broadleaf cattail
Veronica anagallis-aquatica	water speedwell
Yucca glauca	Great Plains yucca
Plants – Non-native Species	
Agropyron cristatum	crested wheatgrass
Arctium minus	common burdock
Bassia scoparia (Kochia scoparia)	kochia/burning bush
Bothriochloa ischaemum	yellow bluestem
Bromus arvensis *(B. japonicus)*	Japanese brome
Bromus inermis	smooth brome

Bromus tectorum	cheatgrass/downy brome
Centaurea diffusa	diffuse knapweed
Chenopodium album	lambsquarters
Cirsium arvense	Canada thistle
Convolvulus arvensis	field bindweed
Conyza canadensis	horseweed
Descurainia sophia	flixweed
Dipsacus fullonum	common teasel
Echinochloa crus-galli	barnyard grass
Elaeagnus angustifolia	Russian olive
Eragrostis barrelieri	Mediterranean lovegrass
Eragrostis curvula	weeping lovegrass
Erodium cicutarium	redstem filaree
Lactuca serriola	prickly lettuce
Lolium perenne	perennial ryegrass
Medicago lupulina	black medick
Medicago sativa	alfalfa
Melilotus officinalis	yellow sweet clover
Melilotus officinalis (M. albus)	white sweet clover
Persicaria maculosa	lady's thumb
Plantago lanceolata	narrowleaf plantain
Poa pratensis	Kentucky bluegrass
Polygonum convolvulus (Fallopia convolvulus)	black bindweed
Psathyrostachys juncea	Russian wildrye
Rumex crispus	curly dock
Salsola collina	tumbleweed
Saponaria officinalis	bouncingbet
Schedonorus arundinaceus	tall fescue
Tamarix chinensis	salt-cedar
Taraxacum officinale	common dandelion
Thinopyrum intermedium	intermediate wheatgrass
Thlaspi arvense	field pennycress
Tragopogon dubius	western salsify
Tribulus terrestris	puncture vine
Trifolium pratense	red clover
Ulmus pumila	Siberian elm
Verbascum thapsus	common mullein
Verbena bracteata	prostrate vervain
Plant Communities	
***Andropogon gerardii – Schizachyrium scoparium* Western Great Plains grassland**	**Xeric Tallgrass Prairie**

***Could be escape from horticultural plantings.**
****A few plants found near southwest boundary of Peterson East.**
Nomenclature follows USDA PLANTS (2018). Synonyms from Ackerfield (2015) shown in parentheses.

Appendix C. National Wetlands Inventory Map, Peterson AFB

Peterson Air Force Base

National Wetlands Inventory and Riparian Areas

Miles
0.5 0.25 0 0.5

1 0.5 0 1
Kilometers

Center for Environmental Management
MIL TARY LANDS
Colorado State University

Appendix D. Peterson Air Force Base Natural Resource Reports and Plans

1997

Natural Heritage Inventory of the Rare Plants, Significant Natural Communities, and Animals of Peterson Air Force Base, Colorado Springs, Colorado, Final Report
T. P. Schuerman, C. De Leo, and D. Culver
Colorado Natural Heritage Program, Colorado State University, Fort Collins

2003

Noxious Weed Survey of Peterson Air Force Base
D. G. Anderson, A. Lavender, and R. Abbott
Colorado Natural Heritage Program, Colorado State University, Fort Collins

2004

Natural Heritage Inventory of Rare Plants, Animals and Plant Communities on Peterson Air Force Base, Colorado Springs, Colorado, Update to Final Report 1997
R. Schorr and R. Abbott
Colorado Natural Heritage Program, Colorado State University, Fort Collins

2007

Peterson Air Force Base Stormwater Drainage Study
URS Group, Inc.
Prepared for U.S. Air Force Center for Environmental Excellence, Brooks City Base, TX

2012

Survey of Critical Biological Resources for Peterson Air Force Base, 2011
J. Sovell and P. Smith
Colorado Natural Heritage Program, Colorado State University, Fort Collins

2014

Noxious Weed Survey of Peterson Air Force Base – 2014
R. Rondeau and A. Lavender-Greenwell
Colorado Natural Heritage Program, Colorado State University, Fort Collins

2018

Sensitive Species Survey, Peterson Air Force Base, 2017-2018
J. Sovell and G. Doyle
Colorado Natural Heritage Program, Colorado State University, Fort Collins

Appendix E. Statement of Work: United States Fish and Wildlife Service Staff Assistance to Peterson AFB, Schriever AFB, and Cheyenne Mountain AFS, Colorado, November 2013

STATEMENT OF WORK

UNITED STATES FISH AND WILDLIFE SERVICE

STAFF ASSISTANCE SUPPORT TO

PETERSON AFB, SCHRIEVER AFB AND CHEYENNE MTN AFS, COLORADO

NOVEMBER 2013

1.0. DESCRIPTION OF SERVICES

This Statement of Work (SOW) provides for on-site staff assistance by the United States Fish and Wildlife Service (FWS) to support the Peterson Air Force Base (AFB), Schriever AFB and Cheyenne Mountain Air Force Station (AFS) (hereafter termed "the installations"), Colorado missions by providing for the conservation and rehabilitation of natural resources on the installations while maintaining military readiness. The FWS will designate a staff position to provide technical, managerial, consultative and advisory assistance services to the installations for the execution and oversight of environmental programs for compliance with the Endangered Species Act (ESA), Sikes Act, Migratory Bird Treaty Act, National Environmental Policy Act (NEPA), Bald and Golden Eagle Protection Act 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* (IAA). The FWS liaison will work in collaboration with the installations to protect and enhance biodiversity and ecosystem integrity on lands under the control of the Air Force. The primary duty station for the FWS liaison will be at Peterson AFB, 21 Civil Engineering Squadron, Installation Management Flight and an alternate duty station will be at Schriever AFB, 50 Civil Engineer Squadron, Installation Management Flight. Specific responsibilities of the FWS liaison are described below.

1.1. Endangered Species Act Compliance. The FWS liaison will provide technical assistance to the installations for the conservation, protection and management of species listed for protection under the auspices of the Endangered Species Act (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 the installations. Frequent contacts will be made to the appropriate FWS office and other related agencies to consult on proposed the installations projects and for information on a sensitive species and habitats of importance.

1.2. NEPA Support. The FWS liaison will assist the installations with the NEPA process for planning natural resources decisions and activities. Major activities include review of AF Forms 332 and AF Forms 813 to assess natural resources impacts of the proposed actions and alternatives and reviewing the adequacy of prepared Environmental Assessments, Biological Assessments, wetland delineations and other documents for an accurate assessment of potential natural resources impacts, including those related to sensitive species such as Federal candidate species and state-listed species.

1.3. Sikes Act Compliance. The FWS liaison will support the installations with compliance with the Sikes Act as specified in Title 16 U.S.C. § 670a(a)(2) by providing technical and advisory assistance for the development and implementation of the respective installation's Integrated Natural Resources Management Plans (INRMP). The emphasis of the INRMP, as required by the Sikes Act, is to achieve certain goals for the maintenance and improvement of the natural environment at the installations. In order to better support programming of projects to achieve mutually agreed goals, and to better assess status of obtaining these goals, a primary task for the FWS liaison will be to bring the installations' INRMPs into compliance with current formatting requirements. The INRMP updates will include the identification of goals and objectives (some may apply to more than one goal), as well as the management initiative or strategy and specific projects to achieve the goal. An implementation plan, stepped down into annual work plans, will guide implementation of the INRMP over the five year term.

The FWS liaison will assist the installations with implementing its INRMP, maintaining INRMP currency on ePLAN (once uploaded), and coordinating annual INRMP reviews. The liaison will facilitate coordination and consultation with the appropriate FWS Ecological Services Office and Colorado Parks and Wildlife. Additionally, the liaison will assist with the implementation of the installation's INRMPs by assisting with programming for AF funds to include provision of cost

estimates in accordance with the basic IAA, assessing the potential for improving natural resource management on the base, options for increasing and utilizing additional funding sources, assisting as necessary with provision of quality control/quality assurance review and oversight services for projects accomplished by others, and operationalizing natural resources compliance into daily mission accomplishment. The FWS liaison will additionally assist in preparation and development of natural resources-related content within the Installation Development Plans for each installation and ensure consistency with their respective INRMPs.

1.4. Migratory Bird Conservation. The FWS liaison will support compliance at the installations with the Migratory Bird Treaty Act, 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. At installations with flight operations, the FWS liaison will communicate with 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.

1.5. Wetlands Protection and Management. In compliance with Executive Order 11990, Protection of Wetlands, May 24, 1977, the FWS liaison will support the installations' initiatives to preserve the natural values of wetlands while carrying out their missions. Major activities and projects supported include wetland delineation (i.e. in accordance with the U.S. Corps of Engineers (COE) 1987 Wetland Delineation Manual) 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., with the ultimate goal of supporting the military mission. 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 the installations' geographical information database layers.

1.6. Natural Resources Evaluation and Damage Assessment. The FWS liaison will assist the installations 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.

1.7. Fish and Wildlife Management. The FWS liaison will support the installations' initiatives for the conservation, protection and management of all fish and wildlife resources on the installations. 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 liaison will support the evaluation of dispersed outdoor recreation potential; as well as management of this program and, as applicable, the reimbursable conservation funds earned.

1.8. Partnerships for Natural Resources Conservation. The FWS Liaison will assist the installations with the development and facilitation of local partnerships for conservation initiatives that support FWS initiatives and the installations' 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.

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 IAA. 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 serving as liaison to the installations shall work at the following address:

PRIMARY:
21 Civil Engineer Squadron
Installation Management Flight
445 Peacekeeper Place
Peterson Air Force Base, CO 80914

ALTERNATE:
50 Civil Engineer Squadron
Environmental Management Element
500 O'Malley Avenue
Schriever AFB, CO 80914

4.0. MANAGEMENT AND SUPERVISION

The FWS employee serving as liaison for the installations will be under the control and supervision of the FWS, but will collaborate and coordinate with the personnel listed below for each respective installation. The installation points of contact are:

Mr. Dan Rodriguez
Installation Management Flight Chief
21 CES/CEI
580 Goodfellow Street
Peterson AFB, CO 80914

Mr. Andy Jensen
Environmental Element Chief
50 CES/CEIE
500 O'Malley Avenue
Schriever AFB, CO 80914

Mr. Dwayne Ray
Environmental Element Chief
721 CES/CEIE
1 NORAD Road, Building 321
Cheyenne Mountain AFS, CO 80914

Additionally, in accordance with the mission essential task list division of responsibilities for environmental management between installations and the Air Force Civil Engineer Center (AFCEC), the FWS employee serving as liaison for the installations will collaborate and coordinate with the installation support team (IST) media manager for natural resources. The IST point of contact is:

Mr. William D. Ritchie
Natural Resources Media Manager
AFCEC/CZO
580 Goodfellow Street
Peterson AFB, CO 80914

5.0. TRAVEL

In accordance with the basic IAA, 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 the installations. No overseas travel is anticipated. Required travel will be identified to the greatest extent possible prior to the beginning of each fiscal year.

6.0. AIR FORCE FURNISHED SUPPORT

The installations will provide suitable office space, telephone, photocopying, office supplies, computer access, software, printer, fax, and other property and equipment necessary to support the FWS liaison position. The installations shall also assist FWS liaison 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. 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 IAA. 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 space, phones, internet connection, printers, fax, and office supplies, etc.

Appendix F. Approved Trees and Shrubs for Landscape Planting

DECIDUOUS AND CONIFER TREES

Deciduous Trees

Ash, Autumn Purple
Ash, Marshall Seedless
Aspen, Single
Crab, Spring Snow
Goldenrain
Hackberry
Hawthorn, Cockspur
Hawthorn, Washington
Linden, American
Linden, Greenspire
Maple, Autumn Blaze
Maple, Amur
Maple, Norway
Maple, Emerald Queen
Oak, Burr
Oak, Northern Red
Oak, Gamble

Conifer Trees

Pine, Austrian
Pine, Pinyon
Pine, Ponderosa
Pine, Scotch
Fir, White
Fir, Douglas
Spruce, Bakeri
Spruce, Colorado Blue

DECIDUOUS AND CONIFER SHRUBS, ORNAMENTAL GRASSES

Deciduous Shrubs

Apache Plume
Barberry, Crimson Pygmy
Currant, Clove
Elder, Golden
Euonymus, Emerald Gaiety
Euonymus, Emerald'N Gold
Leadplant
Lilac, Common Purple
Lilac, Miss Kim
Mahogany, Mountain
Potentilla, Gold Drop
Privet, Golden Vicary
Rabbitbrush
Sage, Russian
Spirea, Anthony Waterer
Spirea, Blue Mist
Spirea, Gold Flame
Spirea, Magic Carpet
Spirea, Snowmound
Yucca

Conifer Shrubs

Alpine, Carpet
Arcadia Juniper
Blue Chip Juniper
Blue Star Juniper
Broadmoor Juniper
Buffalo Juniper
Hetzi Juniper
Hughes Juniper
Icee Juniper
Old Gold Juniper
Sea Green Juniper
Tammy Juniper
Wilton Juniper

Upright Junipers

Blue Point
Spartan
Wichita Blue

Ornamental Grasses

Blue Fescue
Feathereed Grass (Karl
Foerster
Fountain Grass
Japanese Blood Grass
Dwarf Maiden Grass
Flame Grass
Maiden Grass

PERENNIAL FLOWERS

PERENNIALS

Aster
Bachelor Buttons
Ballon Flowers
Bellflowers
Black Eyed Susan
Catmint
Chrysanthemum
Coneflower
Corabells
Coreopsis
Cranesbill
Daisy, Shasta
Daylily
Daylily, Stella De Oro
Gaillardia
Gayfeather
Gazania
Hosta
Iceplant
Kinnikinick
Primrose
Red Hot Poker
Salvia
Sedium
Snow in Summer
Snow on the Mountain
Vinca
Yarrow

Appendix G. Wildland Fire Policy Letter

DEPARTMENT OF THE AIR FORCE
21st Civil Engineer Squadron
Fire Emergency Services Flight
Peterson AFB CO 80914-2370

CEF Standard Operating Procedure 1500-22
16 February 11

WILDLAND FIRES

GENERAL: This Standard Operating Procedure (SOP) establishes the procedures for firefighters during wildland fires. This SOP is a guide for the Incident Commander (IC) and responding crews and will be implemented at all incidents where the fire department has management responsibility. At incidents where another agency has jurisdiction, the Senior Fire Officer (SFO) responding will ensure that a NIMS Incident Management System (IMS) is used to manage Peterson AFB firefighters to ensure that firefighter safety is not compromised.

RESPONSIBILITIES:

1. Peterson AFB Fire Emergency Services (FES), in conjunction with AFSPC/A7A and the Peterson AFB Natural Resource Program Manager, have determined there is no requirement for a Wildland Fire Management Plan (WFMP) in accordance with AFI 32-7064, *Integrated Natural Resources Management*. Based on current mitigation procedures, unimproved lands that present a wildfire hazard are not present, prescribed burns are not used as a land management tool, and a WFMP is not required. In accordance with AFI 32-2001, *Fire Emergency Services Program*, Peterson AFB FES determined there are no additional numbers and/or types of certifications required for the expected level of involvement in the WFMP.

2. Based on land mass, topography, and response history, on-base emergency responses for wildland firefighting events are expected to be limited to incipient firefighting operations. Current certifications and equipment are adequate to mitigate these types of emergencies. In events where our wildland firefighting capabilities are surpassed, mutual aid support will be requested.

3. During mutual aid responses to support wildland firefighting operations in surrounding communities, Peterson FES resources will respond in support roles only. These roles include structural protection and resupply operations. All off-base mutual aid responses will include a Safety Officer.

CINDY R. LITTERAL, GS-12, DAF
Chief, Fire Emergency Services

Supersedes: CEF SOP 1500-22, dated 16 Feb 2011
No. Printed Pages: 4
OPR: CEF
Writer: Ms. Cindy R. Litteral
Editor: Ms. Cindy R. Litteral

Appendix H. Migratory Birds Depredation Permit

DEPREDATION AT AIRPORTS

Permit Number: MB063257-0
Effective: 02/07/2018 Expires: 12/31/2018

Issuing Office:

Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Migratory Bird Permit Office
P.O. Box 25486 DFC (60154)
Denver, CO 80225-0486
Tel: 303-236-8171 Fax: 303-236-8017
Email: permitsR6MB@fws.gov

CHIEF, MIGRATORY BIRD PERMIT OFFICE - REGION 6 DATE: 02/07/2018

Permittee:

COLORADO SPRINGS AIRPORT
ATTN: JOHN CONDON
7770 MILTON E. PROBY PKWY SUITE 50
COLORADO SPRINGS, CO 80916-4961
U.S.A.

Name and Title of Principal Officer:
NICHOLAS JOHN CONDON - AIRPORT OPERATIONS SUPERVISOR

Authority. Statutes and Regulations: 16 USC 703-712; 50 CFR Part 13, 50 CFR 21.41

Location where authorized activity may be conducted:

ON AND NEAR BY THE RUNWAYS, AND AT VARIOUS BUILDINGS AND LOCATIONS AT THE COLORADO SPRINGS AIRPORT IN COLORADO SPRINGS, EL PASO COUNTY, COLORADO.

Reporting requirements:

ANNUAL REPORT DUE: 1/31
You must submit a report to your Regional Migratory Bird Permit Office even if you had no activity. Form. http://www.fws.gov/forms/3-202-9.pdf

Authorizations and Conditions:

A. General conditions set out in Subpart B of 50 CFR 13, and specific conditions contained in Federal regulations cited above, are hereby made a part of this permit. All activities authorized herein must be carried out in accord with and for the purposes described in the application submitted. Continued validity, or renewal of this permit is subject to complete and timely compliance with all applicable conditions, including the filing of all required information and reports.

B. The validity of this permit is also conditioned upon strict observance of all applicable foreign, state, local tribal, or other federal law.

C. Valid for use by permittee named above and the following subpermittees (50CFR 21.41C(5)): Nick Condon, Ryan Campbell, Matt Czeszewski, Mathew Freeman, Brady Giles, Marcus Ornelas, and Scott Lawrence; and USDA, Wildlife Services employees: Douglas Ekberg, Brandon Maples, Shane Koyle, Nolan Payne, and Jason Gilsdorf.

Any subpermittee must be at least 18 years of age and must carry your written subpermittee designation when taking or possessing migratory birds. As the permittee, you are legally responsible for ensuring that your subpermittees are adequately trained and adhere to the terms of your permit. You are responsible for maintaining current records of who you have designated as a subpermittee, including copies of letters you have provided to them. Copies of these letters or a list of subpermittees must be submittee with your annual report.

D. You and subpermittee(s) are authorized to take, temporarily possess and transport the migratory birds specified below to relieve or prevent injurious situations impacting public safety. All take must be done as part of an integrated Wildlife Damage Management Program that emphasizes nonlethal management techniques. You may not use this authority for situations in which migratory birds are merely causing a nuisance.

(1) The following may be lethally taken:

twenty (20) American Coots (*Fulica americana*)
fifteen (15) American Kestrels (*Falco sparverius*)
twenty (20) Blue-winged Teal (*Anas discors*)
fifty (50) Canada Geese (*Branta canadensis*)
one hundred (100) Cliff Swallows (*Petrochelidon pyrrhonota*)
thirty (30) Killdeer (*Charadrius vociferus*)
thirty (30) Lark Buntings (*Calamospiza melanocorys*)
twenty-five (25) Lesser Scaups (*Aythya affinis*)
fifty (50) Mallards (*Anas platyrhynchos*)
five hundred (500) Mourning Doves (*Zenaida macroura*)

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Effective: 02/07/2018 Expires: 12/31/2018

twenty (20) Common Ravens (*Corvus corax*)
five (5) Ferruginous Hawks (*Buteo regalis*)
ten (10) Gadwalls (*Anas strepera*)
five (5) Great Blue Herons (*Ardea herodias*)
four (4) Great-horned Owls (*Bubo virginianus*)
ten (10) Green-winged Teal (*Anas crecca*)
two hundred and fifty (250) Horned Larks (*Eremophila alpestris*)
one hundred (100) House Finch (*Carpodacus mexicanus*)
ten (10) Northern Flickers (*Colaptes auratus*)
twenty (20) Northern Harriers (*Circus cyaneus*)
twenty-five (25) Red-tailed Hawks (*Buteo jamaicensis*)
ten (10) Prairie Falcons (*Falco mexicanus*)
fifty (50) Ring-billed Gulls (*Larus delawarensis*)
fifteen (15) Swainson's Hawks (*Buteo swainsoni*)
ten (10) Turkey Vultures (*Cathartes aura*)
fifty (50) Western Kingbirds (*Tyrannus verticalis*)
one hundred fifty (150) Western Meadowlarks (*Sturnella neglecte*)

(2) The following may be live-trapped and relocated:

twenty-five (25) American Kestrels (*Falco sparverius*)
twenty-five (25) Great Horned Owls (*Bubo virginianus*)
twenty-five (25) Northern Harriers (*Circus cyaneus*)
twenty-five (25) Red-tailed Hawks (*Buteo jamaicensis*)
twenty-five (25) Swainson's Hawks (*Buteo swainsoni*)
ten (10) Prairie Falcons (*Falco mexicanus*)

(3) The following active nests (including eggs) may be destroyed:

two hundred (200) Cliff Swallows (*Hirundo pyrrhonta*) nests

E. **All of the above species and numbers are totals for the year 2018**. If the problem hasn't been resolved by the above authorized activities, then a written request with justification to amend the permit must be submitted to the issuing office for additional authorization.

F. You are authorized in emergency situations only to take, trap, or relocate any migratory birds, nests and eggs, including species that are not listed in Condition D (except bald eagles, golden eagles, or endangered or threatened species) when the migratory birds, nests, or eggs are posing a direct threat to human safety. A direct threat to human safety is one which involves a threat of serious bodily injury or a risk to human life.

You must report any emergency take activity to your Migratory Bird Permit Office, Denver, Colorado at 303-236-8171 within 72 hours after the emergency take action. Your report must include the species and number of birds taken, method, and a complete description of the circumstances warranting the emergency action.

G. You are authorized to salvage and temporarily possess migratory birds found dead or taken under this permit for (1) disposal, (2) transfer to the U.S. Department of Agriculture, (3) diagnostic purposes, (4) purposes of training airport personnel, (5) donation to a public scientific or educational institution as defined in 50 CFR 10.12, (6) donation to persons authorized by permit or regulation to possess them, or (7) donation of migratory game birds only to a public charity (those suitable for human consumption). Any dead bald eagles or golden eagles salvaged must be reported within 48 hours to the National Eagle Repository at (303) 287-2110 and to the Migratory Bird Permit Office, Denver, Colorado at 303-236-8171. The Repository will provide directions for shipment of these specimens.

H. You may not salvage and must immediately report to U.S. Fish and Wildlife Service Office of Law Enforcement any dead or injured migratory birds that you encounter that appear to have been poisoned, shot, electrocuted, have collided with industrial power generation equipment, or were otherwise killed or injured as the result of potential criminal activity. See USFWS OLE contact information below.

I. You may use the following methods of take: (1) firearms; (2) nets; (3) registered animal drugs (excluding nicarbazin), pesticides and repellents; (4) falconry abatement; and (5) legal lethal and live traps. Birds caught live may be euthanized or transported and relocated to another site approved by the appropriate State wildlife agency, if required. When using firearms, you may use rifles or air rifles to shoot any bird when you determine that the use of a shotgun is inadequate to resolve the injurious situation. The use of any of the above techniques is at your discretion for each situation.

Pole traps may be used to capture raptors only when all other reasonable and appropriate methods of deterrence and management prove ineffective. Pole traps employed between sunrise and sunset must be checked at least every 2 hours. Pole traps employed between sunset and sunrise must be checked at least once during the night. Pole traps must be closed down during inclement weather (e.g., precipitation or extreme temperatures) unless they are monitored continuously. Birds captured using pole traps must be relocated a distance sufficient to minimize potential for return to the capture site (preferably at least 100 miles away), except as otherwise authorized by your migratory bird permit issuing office. If injured, the bird must be transferred immediately to a federally permitted migratory bird rehabilitator or licensed veterinarian for care at the permittee's expense.

Anyone who takes migratory birds under the authority of this permit must follow the American Veterinary Medical Association Guidelines on Euthanasia when euthanization of a bird is necessary (http://www.avma.org/issues/animal_welfare/euthanasia.pdf.)

J. You may temporarily possess and stabilize sick and injured migratory birds and immediately transport them to a federally licensed rehabilitator for care.

K. You and any subpermittee(s) must comply with the attached Standard Conditions for Migratory Bird Depredation Permits. **These standard conditions are a continuation of your permit conditions *and must remain with your permit.***

For suspected illegal activity, immediately contact USFWS Law Enforcement at: 720-981-2777

Appendix I. Letter of Approval for Use of Prohibited Devices for the Taking of Wildlife

COLORADO
Department of Public Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

Nick Condon, Operations Supervisor
Colorado Springs Airport
7770 Milton E. Proby Parkway, Suite 50
Colorado Springs, CO 80916

January 24, 2017

Dear Mr. Condon,

This is in reference to your application for an exemption to use prohibited devices for the taking of wildlife. Such prohibitions were enacted by the passage of Amendment 14 in 1996 and the subsequent amendment of 33-6-201, C.R.S. Specifically, the request was to use conibears, foothold traps, and snares to reduce the coyote, fox, raccoon, and skunk populations that interfere with airplane operations on airport property.

Your request to use the requested prohibited device of conibears, foothold traps, and snares is approved for use to control coyote, fox, raccoon, and skunks on the grounds of a public safety concern per the authority provided in the referenced state statute. This exemption will be in effect upon approval of a control plan as outlined below by the CPW until the end of the calendar year on December 31, 2017. If after this time, additional control is documented to be necessary the airport can apply for an annual renewal. To ensure a renewal request is approved, continued documentation of interference of airplane operation due to target species must be documented and submitted.

As part of the requirement for this exemption, as reflected in the agreement between CDPHE and CPW, the airport must submit a control plan to the CPW District Wildlife Manager which specifies control methods to be applied, time and place where the control will be conducted and demonstrates the control program will comply with existing CPW regulations. Additionally, a report of the species and number of animals, including non-target species, taken with prohibited devices must be provided to CPW per their regulations. The airport staff or contractor conducting the control should contact the CPW District Wildlife Manager to further discuss the necessary control plan and reporting requirements.

If you have any questions concerning this approval or I can be of additional assistance, please contact me at 303-692-2628.

Sincerely,

Jennifer House, DVM, MPH, DACVPM
State Public Health Veterinarian
Colorado Department of Public Health and Environment

Cc: Douglas Ekberg, USDA APHIS, Wildlife Services (email)
Shannon Rowe, El Paso County Health Department (email)
Adam Gerstenberger, Colorado Division of Wildlife (email)

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Appendix J. Eagle Depredation Permit.

EAGLE DEPREDATION

Permit Number: MB86619B-1

Effective: 07/11/2018 Expires: 12/31/2020

Issuing Office:

Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Migratory Bird Permit Office
P.O. Box 25486 DFC (60154)
Denver, CO 80225-0486
Tel: 303-236-8171 Fax: 303-236-8017

ASSISTANT REGIONAL DIRECTOR, MBSP - REGION 6 DATE 07/11/2018

Permittee:

COLORADO SPRINGS AIRPORT
7770 MILTON E. PROBY PARKWAY
SUITE 50
COLORADO SPRINGS, CO 80916

Name and Title of Principal Officer:
NICHOLAS CONDON - AIRPORT OPERATIONS MANAGER

Authority: Statutes and Regulations: 16 USC 668a; 50 CFR Part 13; 50 CFR 22.23.

Location where authorized activity may be conducted:

Colorado Springs Airport property, El Paso County, CO
38.7985 Latitude; -104.70085 Longitude

Reporting requirements:

YOU MUST SUBMIT AN ANNUAL REPORT TO YOUR REGIONAL MIGRATORY BIRD PERMIT OFFICE BY **JANUARY 31 EACH YEAR**. YOU MUST SUBMIT AN ANNUAL REPORT EVEN IF YOU HAD NO ACTIVITY. REPORT FORMS ARE AVAILABLE AT: ***http://www.fws.gov/forms/3-202-11.pdf***

Authorizations and Conditions:

A. General conditions set out in Subpart B of 50 CFR 13, and specific conditions contained in Federal regulations cited above, are hereby made a part of this permit. All activities authorized herein must be carried out in accord with and for the purposes described in the application submitted. Continued validity, or renewal of this permit is subject to complete and timely compliance with all applicable conditions, including the filing of all required information and reports.

B. The validity of this permit is also conditioned upon strict observance of all applicable foreign, state, local tribal, or other federal law.

C. Valid for use by permittee named above.

The following subpermittees are authorized: Colorado Springs Airport personnel: Ryan Campbell, Stephanie Curnow, William Flowers, Matthew Freeman, Brett Miller, Scott Ooost, and Benjamin Squire. Peterson Air Force Base personnel: Darron Haughn. USDA Wildlife Services personnel: Blake Bell, Kendra Cross, Trennan Dorval, Douglas Ekberg, Brandon Maples and Nolan Payne.

A subpermittee is an individual to whom you have provided written authorization to conduct some or all of the permitted activities in your absence. Subpermittees must be at least 18 years of age.

D. You are authorized to use non-lethal scare devices, scare tactics or frightening devices to move or disperse **Bald Eagles (Haliaeetus leucocephalus) and/or Golden Eagles (Aquila chrysaetos)** endangering human safety due to a high risk of a serious bird strike to landing and departing aircraft. You are authorized to use airhorns, pyrotechnics, and drive vehicles with horns as necessary to scare eagles. Pyrotechnics must not be shot directly at the eagles.

E. You must make a continuous effort to eliminate attractants and other physical properties that may draw eagles to airport property.

F. This permit does not authorize the killing, injury or capture of any eagle or the destruction of any young or nests.

G. This permit does not authorize the disturbance of eagles at active nest sites that contain eggs or young or nests.

Permit Number: MB86619B-1
Effective: 07/11/2018 Expires: 12/31/2020

H. You must notify the permit issuing office at (303) 236-8171 within 48 hours of any injury or death of any eagle during project activities.

I. You must submit a report of activities conducted under this permit to the USFWS, Migratory Bird Permit Office, PO Box 25486, DFC (60154), Denver, Colorado 80225, by the due date specified on the face of the permit. The report form, 3-202-11, is available at: http://www.fws.gov/forms/3-202-11.pdf.

J. You must comply with the attached Standard Conditions for Eagle Depredation Permits. **These standard conditions are a continuation of your permit conditions *and must remain with your permit.***

K. Permit amended to change Principal Officer and update Condiditon D

For suspected illegal activity, immediately contact USFWS Law Enforcement at: (720) 981-2777

15.0 ASSOCIATED PLANS

Tab 1 – Bird/Wildlife Aircraft Strike Hazard (BASH) Plan

Tab 2 – Integrated Cultural Resources Management Plan (ICRMP)

Tab 3 – Integrated Pest Management Plan (IPMP)