INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

2021-2025

Pueblo Chemical Depot









U.S.ARMY

PUEBLO DEPOT

SAFETY 1942 SERVICE

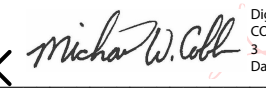
INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN 2021-2025

Pueblo Chemical Depot

APPROVAL

This Integrated Natural Resources Management Plan was developed in accordance with Army Regulation (AR) 220-1, Environmental Protection and Enhancement, paragraph 4-3d(1)(a), and meets requirements of the Sikes Act (16 USC 670a. et seq.) as amended.

Submitted By:

X 

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EXECUTIVE SUMMARY

This Integrated Natural Resources Management Plan (INRMP), if implemented as written, will fulfill the intent and obligations of the Sikes Act and all other applicable federal, state, and local rules and regulations regarding management of natural resources on the U.S. Army Pueblo Chemical Depot (PCD) near Pueblo, Colorado. Furthermore, we will manage floral and faunal resources to achieve self-sustaining populations and communities, while federal- and state-listed candidate, threatened, and endangered species may be accorded special management prescriptions. Invasive, nonnative species are addressed on a species-specific basis through the most feasible methods, and their respective populations will be controlled or eradicated on PCD to the extent practicable. PCD will be proactive in community outreach by providing recreational and educational opportunities to the public, within the limits of mission, safety and security. Implementing this INRMP will help PCD achieve its mission to safely secure, store, and monitor the chemical stockpile while protecting the workforce, the public, and the environment with the additional goals of preparing for and supporting stockpile destruction and preparing for depot closure.

PURPOSE

The purpose of this INRMP is to guide the natural resources management program at PCD from 2021 through 2025 and provide a solid foundation for the program beyond 2025, if PCD is operational at that point. The INRMP addresses natural resources management on all lands for which PCD has jurisdiction and control, including lands occupied by tenants or lessees or used by others pursuant to a permit, license, right of way, or any other form of permission. Natural resources management efforts are coordinated with adjacent landowners to the extent practicable to address resource management planning on a landscape scale.

- Support of Army Mission
  - Maintaining optimal environmental conditions on military lands is essential for the success of the military mission at PCD. The management measures were developed based on the conditions of the resources, the military mission, and the supporting activities.
- Benefits
  - The INRMP provides the Army and the installation with one document that describes the state of natural resources and describes natural resources management on the installation. Formerly each managed species had a management plan. These plans often had redundant information and did not address the larger context of ecosystem-level natural resources management goals and objectives. The INRMP, however, provides a concise analysis of all levels of the ecosystem, from the interaction of terrestrial and aquatic habitats with each other, to the management methods and goals for individual species. This larger picture provides a broader basis of understanding for planning and budgeting.

IMPLEMENTATION

The primary Natural Resource Management Goals of this INRMP conform to those outlined in the Army Environmental Strategic Plan. Those general goals are the following: (1) Ensure the long-term sustainability of the lands to support the military mission, (2) Conserve and protect the natural resources, (3) Protect cultural resources, (4) Accommodate multiple uses of the land.

The goals of this INRMP fall into four broad categories: Mission Support, Resource Stewardship, Public Use and Benefit, and Communication, Cooperation and Coordination. These respective goals and their supporting objectives are interrelated in principle and function, as detailed below.

- Mission Support
  - Provide direct support to the Department of the Army (DA) and PCD to ensure that the natural resources required to support the mission on PCD are present, functional, and self-sustaining to the extent practicable.
  - Ensure compliance with applicable local, state, and federal rules and regulations as they pertain to the natural resources under the stewardship of DA and PCD. Noncompliance with these rules and regulations has the potential for negatively affecting the programs, and thus the mission, on PCD.
- Resource Stewardship
  - Pursue resource restoration when needed or where appropriate. This may apply not only to the rehabilitation of damaged properties or resources, but also to the control of nonnative species and the reintroduction of indigenous floral and faunal species.
  - Employ ecosystem management principles and practices. This includes two objectives generally adopted by many of today's resource management professionals: native species management and resource sustainability.
  - Ensure the future of functional natural ecological systems by developing, observing, and enforcing rules and regulations that apply to protection of resources. Another form of resource protection is the prevention, control, and eradication of invasive nonnative species.
- Public Use and Benefit
  - Provide recreational opportunities, both nonconsumptive and consumptive, that reasonably are sustained by the resources and are practical given the resources available. Allowable recreational activities must also be within mission, safety and security parameters established by the Army and PCD and must be conducted on a noninterference basis with the military mission.
  - Promote and support educational opportunities relative to the natural environment under PCD's management purview. These opportunities can range from giving presentations to youth groups to hosting university-level courses on shortgrass prairie ecosystems, and might be offered on site as well as off the depot.
  - Promote and support university research opportunities. By supporting research projects, management principles and practices on PCD and at other sites with similar resources will be enhanced.
- Communication, Cooperation and Coordination
  - Ensure lines of communication and coordination within the PCD community are maintained to implement the activities and programs described in this INRMP.
  - Establish and maintain open lines of communication with the private sector, including adjacent landowners and members of local communities, for the purpose of providing information on current programs and activities.
  - Seek input and expertise from nongovernmental organizations for the purpose of enhancing the natural resources program on the depot through broadening the base of scientific and nonscientific knowledge from which management decisions will be made.
  - Exchange information with local, state, and other federal agencies to ensure compliance with rules and regulations and to seek alternate management skills and knowledge to augment the PCD natural resources program.

The ability to achieve these goals depends directly on the health and condition of the natural resources at PCD. Protecting the ecological and biological integrity of the military lands ensures that the environmental conditions continue to provide for the persistence of native shortgrass prairie and Colorado eastern plains riparian ecosystems and overall operational safety and efficiency.

The natural resources management program must remain flexible if it is to achieve long-term success. PCD will achieve and maintain this flexibility by incorporating adaptive management techniques into the program. Adaptive management is a process by which new information from monitoring data, special studies, or scientific literature is used to evaluate the success of the management measures in place. This

information is then used to determine the changes in the management approach necessary to ensure the continued success of the program. PCD might also be required to adapt the natural resources management program to unforeseen changes in military mission and legal requirements.

This INRMP has more clearly defined the natural resources management goals and objectives at PCD. These refined goals and objectives have been designed to reflect the aim of continual improvement of the ecosystem at PCD and the balance between ecosystem management and the military mission.

ENVIRONMENTAL IMPACTS

As stated in Army Regulation (AR) 200-1, Environmental Protection and Enhancement, "the Army is committed to environmental stewardship in all actions as an integral part of its mission and to ensure sustainability," and will "sustain the environment to enable the Army mission and secure the future." This INRMP has been prepared in accordance with AR 200-1 and the Department of Defense (DoD) manual, Integrated Natural Resources Management Plan (INRMP) Implementation Manual (DoD Manual 4715.03-M). In accordance with Title 32 of the Code of Federal Regulations (CFR) part 651, Environmental Effects of Army Actions—which states that "environmental analyses required by this part will be integrated as much as practicable with other environmental reviews, laws, and Executive Orders"—this INRMP integrates into a single document the installation's INRMP and the associated National Environmental Policy Act (NEPA) analysis (i.e., a Record of Environmental Consideration [REC]) for implementing the program.

NEPA requires that federal agencies consider the environmental consequences of major proposed actions. In preparing this INRMP, PCD has maintained its commitment to ensure that environmental considerations are integral to its mission and has complied with AR 200-1 and 32 CFR part 651 by integrating the INRMP and NEPA compliance documentation. In addition, this INRMP provides the guidance necessary for PCD to maintain compliance with DoD Instruction (DoDI) 4715.03 (Natural Resources Conservation Program), Executive Order 11990 (Protection of Wetlands), the Clean Water Act, and the Endangered Species Act (ESA) of 1973.

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1. OVERVIEW

1.a. Purpose

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1.b. Scope

The INRMP is the guiding natural resources document for PCD, Colorado. The INRMP provides useful information for all organizations and individuals involved with or interested in the management and use of natural resources and lands on PCD.

1.c. Goals and Objectives

PCD intends to follow the major land management program goals stated in AR 200-1:

- Integrate natural resources stewardship and compliance responsibilities with operational requirements to help achieve sustainable ranges, training areas, and other land assets.
- Develop, initiate, and maintain programs for the conservation, utilization, and rehabilitation of natural resources on Army lands.

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1.d. Responsibilities

There are numerous people and organizations involved in natural resources management on PCD. Below is a list of the different stakeholders along with a brief description of their responsibilities.

Installation Stakeholders

Commander — The Commander, PCD, is responsible for his staff's actions to implement this INRMP.

Environmental Management Office (EMO) — The EMO is responsible for maintaining compliance with environmental laws and regulations and managing the natural resources on PCD. The INRMP is implemented through the installation's EMO and coordinated through other organizations as their services and cooperation are needed or as their programs impact natural resources. The Department of Public Works (DPW) and the Security and Law Enforcement Division (SLED) provide logistical support. The Public Affairs Office (PAO) provides community outreach assistance.

Specifically, EMO:

- Implements the INRMP on behalf of the Commander;
- Develops and implements programs to ensure the inventory, delineation, classification, and management of wetlands, threatened and endangered species, sensitive and critical habitats, and other natural resource areas;
- Contributes to and reviews all environmental documents (such as NEPA environmental analysis documents including Categorical Exclusions [CX], Environmental Assessments [EAs], Environmental Impact Statements [EISs], various management plans, etc.) and construction designs and proposals to ensure adequate protection of natural resources; and;
- Coordinates with internal and external organizations on issues related to conservation and natural resources management on PCD.

PuebloPlex — In 1988, the Pueblo Depot Activity was realigned by the Defense Base Realignment and Closure (BRAC) Commission. Although closure of the depot was anticipated, it could not be accomplished within the required 5 years because of the time needed to destroy the chemical munitions stored on site. In response to anticipated social and economic impacts on the surrounding communities resulting from the realignment, the Colorado Legislature established the Pueblo Depot Activity Development Authority (PUDADA) in 1994 as a local reuse authority. PUDADA, also known as PuebloPlex, has a master lease (DACA45-1-18-6039) with the Army for reuse of vacant structures and property (PCD 2017). Leased structures include former munitions storage bunkers termed "igloos" as well as former warehouses, office buildings, and other structures. The structures and property must meet local building codes before being used by the public. Renovation and repairs, therefore, are sometimes required to upgrade the facilities. Buildings that are no longer needed to support the military mission on PCD and for which PuebloPlex has no use can be demolished.

External Stakeholders and Interested Parties

U.S. Army Corps of Engineers (USACE) — USACE Engineer Research and Development Center laboratories can provide research, technical, administrative, and logistical support to PCD. The USACE Regional Civil Works Office in Pueblo, Colorado has the primary responsibility for administering Section 404 permits when required on PCD. USAEC also helps centrally manage the Conservation Reimbursable Forestry, Agricultural/Grazing Outlease, and Fish and Wildlife Conservation programs, which provide ecosystem-level management that supports and enhances the land's ability to support each installation's respective military mission.

Regional Military Installations — PCD's natural resources issues are similar to those of other military installations in the area, including the U.S. Air Force Academy, Cheyenne Mountain Air Force Station, Fort Carson Army Post, Peterson Air Force Base, Schriever Air Force Base, Buckley Air Force Base, and Francis E. Warren Air Force Base (in Wyoming). These installations participate in the Front Range Ecoregional Partnership (FREP) when available.

U.S. Fish and Wildlife Service (USFWS) — The USFWS is the primary federal agency with which PCD cooperates on natural resources management. Cooperative efforts with the USFWS have included federal-listed species management, migratory bird and eagle protection and management, recreation, fishing, wildlife law enforcement, issuance of eagle take permits, and wetland inventories. The USFWS is responsible for enforcement and compliance with the Endangered Species Act (ESA) and Migratory Bird Treaty Act (MBTA), as well as other federal wildlife acts, laws and regulations. In accordance with 16 USC 670a, DoDI 4715.03, and AR 200-1, this INRMP is to be developed and implemented in cooperation with the USFWS, and the USFWS is a signatory to it.

U.S. Animal and Plant Health Inspection Service, Wildlife Services (APHIS) — The Wildlife Services division of APHIS assists with trapping and lethal control of nuisance wildlife on PCD, particularly on and around the Chemical Limited Area (G-Block). APHIS is also involved in plague management for black-tailed prairie dog management.

Colorado Parks and Wildlife (CPW) — The CPW is responsible for management of fish and wildlife within the state, including those on federal lands. Specific cooperation with the CPW involves law enforcement, license/permit sales, special seasons and bag limits, check station operation, issuance of special collection permits, and compliance issues concerning state laws and regulations, which extend to state-listed species which are threatened, endangered, or species of concern. In accordance with 16 USC 670a, DoDI 4715.03, and AR 200-1, this INRMP is to be developed and implemented in cooperation with the CPW, and the CPW is a signatory to it.

Colorado Division of Water Resources (DWR, also known as the Office of the State Engineer) — DWR administers water rights, issues well permits, and is the state office responsible for dam construction and safety.

Adjacent Landowners and Managers — The properties surrounding PCD are owned and managed by a wide variety of government and private entities. A private ranch is adjacent to PCD along its northeastern border. To the north and west of this property is State Land Board (SLB) land, which is leased by the U.S. Department of Transportation, upon which is located the 33,492-acre Transportation Technology Center (TTC). The TTC is used primarily as a testing facility for new and experimental trains, of both national and international origin. It has 48 miles of track on which to conduct tests to ensure the safety of rail systems. The TTC is also the site of one of the premier hazardous materials (HAZMAT) emergency response training centers in the world. Personnel from national and international governments and organizations come to TTC to be trained in responding to HAZMAT emergencies. West of the TTC and extending up the Chico Creek watershed is the Chico Basin Ranch, which is a working cattle ranch operation owned by SLB and managed by Ranchlands, a family-based ranch management company. The Chico Basin Ranch, along with the Bohart Ranch managed by The Nature Conservancy on its northern border, provide an excellent opportunity for partnering in resource management and for managing natural resources on a landscape scale. Along PCD's east side is a mixture of SLB and Bureau of Land Management (BLM) properties leased to area ranchers. South of PCD is mostly small tracts of private land used for ranching, farming and residential purposes. On the west are larger private properties that support cattle ranching operations.

Native American Tribes — The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, executive orders, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. AR 200-1, DoDI 4710.02*: DoD Interactions with Federally Recognized Tribes*, and Executive Order 13175, *American Indian and Alaska Native Policy* require regular and meaningful consultation and collaboration with Indian tribal governments.

PCD follows a process established by DoD policy, pursuant to Section 106 of the National Historic Preservation Act (NHPA) as amended, that permits elected officials and other representatives of Indian tribal governments to provide meaningful and timely input on actions or policies that might be of tribal interest, such as those that affect Indian sacred sites or traditional cultural properties. Also, consultation is conducted as necessary under the NEPA, the Native American Graves Protection and Repatriation Act (NAGPRA), and other laws and situations implicating concerns of the Native American community. Tribal organizations that will be consulted with regard to these issues include:

Universities and Colleges — Institutions of higher education partner with natural resources staff at PCD on diverse projects. Colorado State University-Pueblo has supported research for wildlife management, monitoring and surveys.

1.e. Authority

The Sikes Act, 16 United States Code (USC) 670a, requires a natural resources management plan to be written for every DoD installation having significant natural resources. The plans are developed cooperatively with the Installation, the United States Fish and Wildlife Service (USFWS), and the respective state wildlife agency (Colorado Parks and Wildlife [CPW]). The law does not enlarge or diminish the existing responsibility of the USFWS or CPW, but the management plan provides for a coordinated approach to conservation, sustainable multipurpose use, and public access. The Act requires that the management plans be "consistent with the use of the military installation to ensure the preparedness of the Armed Forces." The installation natural resources management has been conducted cooperatively with the USFWS and the CPW by actions agreed upon and prescribed in an INRMP. This statutory requirement has been implemented at the Department of Defense (DoD) level in DoDI 4715.03 and at the Army level 25 in AR 200-1.

DoDI 4715.03, Section 4, states that it is DoD policy that the principal purpose of DoD lands, waters, airspace, and coastal resources is to support mission-related activities. All DoD natural resources conservation program activities shall work to guarantee the DoD continued access to its land, air, and water resources for realistic military training and testing, as well as to sustain the long-term ecological integrity of the resource base. This is accomplished through management practices that facilitate long-term comprehensive mission sustainability while demonstrating stewardship of natural resources by protecting and enhancing those resources for support of the military mission, and maintenance of ecosystem integrity to the greatest extent feasible.

Army Guidance for Implementation of the Sikes Act Improvement Act states, in part, that INRMPs shall be prepared to assist installation commanders in their efforts to conserve and rehabilitate natural resources consistent with the use of military installations to ensure the preparedness of the Armed Forces. INRMPs are intended principally to help installation commanders manage natural resources more effectively so as to insure that installation lands remain available and in good military mission.

Under the statute, each installation INRMP must, when appropriate and applicable, provide for:

- Fish and wildlife management, land management, forest management, and fish and wildlife oriented recreation;
- Fish and wildlife habitat enhancement or modifications;

- Wetland protection, enhancement, and restoration where necessary for support of fish or wildlife;
- Integration of, and consistency among, the various activities conducted under the INRMP, establishment of specific natural resources management objectives, and time frames for proposed action;
- Enforcement of applicable natural resource laws (including regulations);
- No net loss in the capability of military installation lands to support the military mission of the installation;
- Public access to Army lands and waters when such access is compatible with military mission activities, safety, security, fiscal considerations, and ecosystem sustainability, and
- Such other activities as the Secretary of the military department considers appropriate.

The Sikes Act also requires or provides for:

- Regular review by the signatories of this INRMP of its operation and effects, not less often than every five years;
- Provisions for establishing special hunting and fishing permits and collecting and spending the fees for the protection, conservation, and management of fish and wildlife, including habitat improvement and related activities in accordance with this INRMP;
- The management and conservation of natural resources under DoD control, including planning, implementation, oversight, and enforcement functions, are inherently governmental functions and shall not be contracted (via such mechanisms as Office of Management and Budget Circular A-76 or any similar circulars), and
- For contracts involving implementation of this INRMP, giving priority to state and federal agencies having responsibility for conservation and management of fish or wildlife.

Sikes Act Tripartite Memorandum of Understanding, 2013

- This memorandum of understanding (MOU) established a cooperative relationship among the DoD, the USFWS, and state fish and wildlife agencies [represented by the Association of Fish and Wildlife Agencies (AFWA)] for preparing, reviewing, and implementing INRMPs.

U.S. Fish and Wildlife Service and the U.S. Army Interagency Agreement, 2020

- This interagency agreement (IA) establishes a cooperative conservation relationship between the USFWS and the U.S. Army (Army) to support the management of natural resources on Army-controlled lands. This IA will help the Army meet Federal stewardship requirements and ensure the continued availability of installation lands to support military readiness by providing a mechanism under which the Army can request reimbursable support from the USFWS.

1.f. Stewardship and Compliance

The Army's *Strategy for the Environment*, published in 2004, establishes a long-range vision for the Army to meet its mission today and into the future. Sustainability is placed at the core of the *Strategy* and moves the focus beyond simple compliance with environmental regulations towards a focus on environmental stewardship. The *Strategy* applies a community, regional, and ecosystem approach to managing natural resources. The programs and actions in this INRMP not only achieve compliance with laws and regulations (e.g., Migratory Bird Treaty Act) but also outline a program that will sustain ecosystems on PCD through active management and stewardship.

1.g. Review and Revision Process

PCD, USFWS, and the CPW will meet annually to review the accomplishments and planned natural resource projects. The Sikes Act requires the INRMP to be "reviewed as to operation and effect by the parties thereto on a regular basis, but not less often than every 5 years." Based on such review, a revision may be necessary, but the timeframe for publication of such revision is not mandated by statute. While the revision process proceeds, the current INRMP remains in effect for PCD, and the responsibility and authority of the USFWS and the CPW towards applicable natural resource laws and regulations also remains in full effect. Also, if all three parties agree that this INRMP is effective and needs no significant changes, then it can be extended from year to year by signatures of all three parties. The annual review will discuss, at a minimum, the metrics specified in DoDI 4715.03 for assessing annually how well the INRMP applies conservation efforts in order to ensure no net loss of military mission capability of the installation.

1.h. Management Strategy

The programs and projects outlined in this INRMP are designed to maintain ecosystems and their components as well as facilitate the safe storage and demilitarization of chemical weapons at PCD. By focusing on the ecosystem level, the installation strives to maximize biodiversity, improve wildlife habitat, minimize invasive species, and restore the shortgrass prairie of PCD. Proper natural resources management creates healthy and resilient landscapes, which, consistent with the mandate of the Sikes Act, maintains or increases their availability for military mission. Management decisions are made on the best available science and attempt, as practical, to mimic the natural historical disturbance regimes for the ecoregion. Best Management Practices (BMPs) are usually selected from a list of well-established techniques, but on occasion new techniques will be tried. By mimicking the natural disturbance processes (e.g., fire) that shaped the evolutionary history of the landscape, the installation is able to design cost-effective and appropriate management programs.

As a major land-holder in Pueblo County, PCD actively participates in regional conservation initiatives. By engaging with other stakeholders and interested parties in the region, PCD works cooperatively towards ecosystem-level conservation goals. With this approach, the Army contributes to regional efforts to ensure species of concern do not require more intensive or less compatible conservation efforts in the future. The natural resource management programs and this INRMP are adaptive. PCD will continually improve and evaluate goals, objectives, and management strategies as information improves and techniques are proven in the field.

This INRMP, especially the project list in Appendix 4, will be reviewed annually by the signatories to evaluate effectiveness and to look for improvement opportunities. Those annual reviews will satisfy the natural resource management objectives of the environmental management system (EMS).

1.i. Other Plan Integration

This INRMP serves as a foundation to the natural resources management goals on PCD. All installation projects will be reviewed to ensure that they are consistent with this INRMP and with other natural resources plans referenced within.

2. CURRENT CONDITIONS AND USE

2.a. Installation Information

2.a.(1) General Description

PCD is east of Pueblo, Colorado, in Pueblo County (Figure 1). The Arkansas River is 1.0–1.5 miles south of the depot. PCD is generally square, approximately 6.5 miles north-to-south and 6 miles east-to-west (Figure 2). The topography of PCD slopes from the north (1,665 meters) to the south (1,400 meters) (Figure 3). The cantonment area (Figure 4) covers about 4 percent of PCD's total land area (approximately 900 acres) in the south central portion of the depot, containing administrative buildings, logistical support facilities, warehouses, a residential area, a fire department, and a health clinic.

There has been considerable discrepancy between assorted plans, reports, and studies on estimates of PCD's acreage. The most commonly quoted figure in management plans and NEPA documents is approximately 23,000 acres. PCD's Real Property Management Office uses 23,121 acres in its documentation. Geographic information systems (GIS) boundary mapping provides a sum of 22,822.3 acres for the depot, which is probably the most accurate figure (Figure 2).

The north-central portion of the depot is the Ammunition Storage Area (ASA) where conventional, chemical, and nuclear munitions were stored. Along the eastern and western sides of the ASA are open space areas or buffer zones called Wildlife Management Areas (13,594 acres) that are devoid of facilities except for two small-arms ranges in the eastern Wildlife Management Area (Figure 5). One is used by security and police agency personnel for firearms qualification exercises and the other is inactive.

The depot's water supply source is groundwater; water is drawn from seven wells, stored in ground-level reservoirs, and pumped to water towers for gravity-derived pressure. The installation maintains its own substation for electrical power. Most of PCD's utility systems date back to the early 1940s when the installation was constructed. There are 40–50 miles of maintained roads on the post, and approximately 100 additional miles of hard-surface, unmaintained roads throughout the ASA (Figure 6). Two-track dirt roads can be found throughout the open space areas on the east and west sides of the depot. PCD is served by Colorado State Highway 96 which runs concurrent with U.S. Highway 50 south of PCD. To the west, Highway 50 intersects with Interstate 25, which runs south through Pueblo and north past Denver, Colorado.

The BNSF and Union Pacific railroad companies provide service to the Pueblo area. BNSF rail lines run parallel to U.S. Highway 50 south of PCD. Both companies' lines serve Pueblo and Denver and branch through most states west of the Mississippi River. This rail service was once integral to the depot's mission, transporting munitions and military supplies to and from the installation. The rail system is still active, providing transcontinental delivery of durable goods. In addition, train engines and assorted cars pass through PCD to access the TTC.

Pueblo Memorial Airport is between Pueblo and PCD. Originally established in 1943 as a military airfield, it ceased functioning as such in 1946 and was acquired by the city of Pueblo to serve as a municipal airport in 1953. The airport handled an average of 537 aircraft operations (landings and departures) per day in 2020 (AirNav 2020). United Express provides commercial service to Denver, Colorado.

2.a.(2) Acquisition

Following World War I, most of the nation's ordnance storage facilities were along the East Coast. Concerns about the vulnerability of these sites to attack led to plans for the development of additional depots, which were to be sited strategically—close to raw materials, offering economy of operation, and favorable climate (Simmons and Simmons 1996). With the advent of World War II, these plans were used to ultimately construct 15 depots in two development phases; U.S. Army Pueblo Ordnance Depot was built during the second phase.

The area east of Pueblo, Colorado, which in 1940 was Colorado's second most populous community, was an attractive potential site for a military munitions depot because the site was centrally located, well-served by the railways, and benefitted from a semiarid climate to minimize deterioration of materiel in open-air storage conditions. Before its acquisition by the United States the area was open rangeland and used extensively for cattle grazing, and although there were several individuals and corporations, who owned portions of what is now PCD, the bulk of the land was owned by the Thatcher Land and Cattle Company and the State of Colorado (Simmons and Simmons 1996, Lucero 1994). In late 1941, action was initiated to acquire the land through condemnation. The Decree on Declaration of Taking awarded the bulk of what is now PCD to the United States in 1942 (United States District Court 1943). Prior to acquisition, PCD had supported large grazing operations and low human densities.

2.a.(3) Historic Mission

The U.S. Army Pueblo Ordnance Depot was established by the United States in 1942 to store military munitions; however, its mission was soon expanded to include the storage and issuance of general supplies to support U.S. military efforts in World War II. In 1946, the depot's mission was again expanded to include the maintenance of artillery, fire control, and optical equipment. During the Korean War, shipments of general supplies and ammunition increased, and the depot reached its highest civilian strength of nearly 8,000 employees. Missile maintenance was added to the depot's mission in the 1950s, and the depot was renamed Pueblo Army Depot in 1962. With the exception of the Pershing Missile Program, missile maintenance was suspended at Pueblo Army Depot in 1974.

With an interest in cutting expenditures, in the 1980s the DoD looked to reducing its number of military holdings by closing nonessential installations. Consequently, Pueblo Army Depot was slated for closure in 1987 and was approved for closure in 1991. In late 1987, the United States entered into the Intermediate-Range Nuclear Forces Treaty with the Soviet Union, and the Pueblo Army Depot was designated one site at which Pershing missiles would be disassembled and destroyed. PCD completed this mission in 1991 (Simmons and Simmons 1996).

Conventional munitions were shipped out of the depot in the early 1990s to support Operation Desert Shield/Desert Storm in the Persian Gulf (Simmons and Simmons 1996). The depot's current mission includes chemical munitions storage and preparation and support for demilitarization, and site cleanup. To reflect this mission realignment, the installation was renamed U.S. Army Pueblo Chemical Depot in late 1995. PCD stored approximately 8 percent of the nation's chemical weapons stockpile before demilitarization operations began in 2016. The stockpile at PCD includes about 780,000 munitions containing approximately 2,613 tons of mustard agent. PCD stores three munitions types: 155-millimeter (mm) projectiles, 105mm projectiles, and 4.2-inch mortar rounds. PCD and the Blue Grass Army Depot in Kentucky contain the remaining U.S. chemical weapons stockpile.

In 1988, the Pueblo Depot Activity was realigned by the Defense BRAC Commission. Although closure of the PCD was anticipated, it could not be accomplished within the required 5 years because of the time needed to destroy the chemical munitions stored on site. In response to anticipated social and economic impacts on the surrounding communities resulting from the realignment, the Colorado Legislature established the Pueblo Depot Activity Development Authority (PUDADA) in 1994 as a local reuse authority. PUDADA, also known as PuebloPlex, has a master lease (DACA45-1-18-6039) with the Army for reuse of vacant structures and property (PCD 2017). Leased structures include former munitions storage bunkers termed “igloos” as well as former warehouses, office buildings, and other structures. The structures and property must meet local building codes before being used by the public. Renovation and repairs, therefore, are sometimes required to upgrade the facilities. Buildings that are no longer needed to support the military mission on PCD and for which PuebloPlex has no use can be demolished. Several parcels have been established on PCD that pertain to PuebloPlex ownership transfers (Figure 7).

In 1993, an internationally assembled Chemical Weapons Convention was convened in The Hague, Netherlands to address the issue of chemical munitions worldwide. As a result of that meeting the Chemical Weapons Convention Treaty was developed and ratified by the United States in 1997, whereby nations stockpiling chemical munitions would destroy those weapons by the year 2007. The treaty allowed for a one-time 5-year extension to 2012. Congress established a new deadline of December 31, 2023 in 50 USC section 1521(b). Demilitarization operations at PCD are estimated to be complete by the end of 2023.

Construction of the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP), a facility where chemical munitions held in storage at PCD are being destroyed, was completed in 2013. The plant completed its systemization phase and began operation on September 7, 2016. Demilitarization operations at PCAPP include five steps.

1. Robotic equipment removes explosives from the weapon.
2. The system remotely accesses the weapon's interior and washes out the mustard agent with water under high pressure.
3. The facility neutralizes the mustard agent with caustic solution and hot water. The byproduct is termed hydrolysate.
4. Microbes treat the hydrolysate, breaking it down into brine. The salts in the brine are separated and the water is recycled. The resulting salt cakes are shipped off site for disposal at a permitted facility.
5. After heating metal parts to 1,000 degrees Fahrenheit (°F) for 15 minutes, crews send them out for recycling.

The Explosive Destruction System (EDS) augmented the pilot plant to destroy a number of problematic munitions that could not be easily destroyed by the main plant's automated equipment. Problematic munitions include those that have leaked in the past, or whose deteriorated physical condition does not easily allow for automated processing. The EDS eliminated 951 items containing 3.82 tons of mustard agent during two campaigns from March 2015 to December 2018. The EDS equipment was disassembled and removed from PCD in 2019.

PCAPP will employ three Static Detonation Chamber (SDC) units, each consisting of two units, the detonation chamber and the off-gas treatment system, to augment the main plant by destroying all remaining problematic munitions, including the 4.2-inch mortar rounds. Munitions are fed into the electrically heated detonation chamber where high temperature (approximately 1,100 °F) detonates or deflagrates the munition and destroys the chemical agent. Off gases are treated using a thermal oxidizer, cooled, and filtered to remove contaminants. Scrap metal is recycled and filtered salts are shipped off site for disposal at a permitted facility. SDC units are under construction and scheduled to begin operation by the end of 2021. PCAPP had destroyed half of the 2,613 tons of mustard agent, equating to more than 220,000 155mm munitions, in February 2020.

The main plant (that is, PCAPP) uses water for several purposes, such as neutralizing the mustard agent and cooling the processing equipment. The neutralization followed by biotreatment process at PCAPP is designed to recycle water used in the demilitarization process and the plant is designed as a zero-discharge facility. However, approximately 50,000 gallons of water per day may be used to replace evaporative losses within the treatment equipment. In addition, hydrolysate is sometimes shipped off site for disposal at a permitted facility to meet operational needs. Approximately 737,000 gallons of hydrolysate was shipped between July 2017 and March 2020. An estimated additional 500,000 gallons of hydrolysate was shipped from April through June 2020. This water consumption may have implications for resource protection and management. However, PCAPP is subject to DoD, Department of the Army, and PCD rules, regulations, and guidelines regarding resource protection. Open lines of communication and cooperation with the PCD EMO staff are essential for maintaining a cooperative relationship and coordinated protection of the area's natural resources.

2.a.(4) Military Mission

The primary current and near-future military mission of PCD is two-fold: the safe and secure storage and destruction of chemical munitions and the cleanup of contaminants in PCD soils and waters. Implementation of this INRMP will not significantly impact either of these programs. Furthermore, both of these activities are beyond the scope of this INRMP: the construction of the chemical demilitarization facility and the destruction of mustard agent have been addressed in two Environmental Impact Statements (EISs), and the cleanup operations are conducted under RCRA Permit No. CO-13-12-23-01, which supersedes the requirement for NEPA documentation. Continuation of natural resources management and stewardship activities on PCD does not conflict with these programs and military mission.

2.b. General Physical Environment and Ecosystems

2.b.(1) Climate

The climate of the Colorado eastern plains is comparatively uniform from place to place, with characteristic features of low relative humidity, abundant sunshine, infrequent rains and snow, moderate to high wind movement, and a large daily and seasonal range in temperature (Doesken et al. 2003). Precipitation in the plains has a distinct seasonal cycle, with 70 to 80 percent of the annual total precipitation falling from April through September. Winters are characterized by dry air and strong winds. Storms occur from early March through early November.

Southeastern Colorado's temperatures are relatively mild, with an annual average of 54 °F in the Pueblo area. The hottest month is typically July, with average maximum temperature of approximately 93 °F. December through February are the coldest months, with an average low temperature of approximately 19 °F. Common summer daily maximum temperatures are 88 °F or above. Temperatures of 100 °F are common below 5,000 feet but rare above that altitude. The hottest temperature ever recorded in Colorado was 115°F at Lamar on July 20, 2019. The usual winter extremes in the plains are from zero to -10 or - 5 °F, but low readings of -30 to -40 °F have been recorded during extreme cold periods. The PCD area is typically semiarid to dry. Relative humidity is generally highest (average 68 percent) in the morning before sunrise and lowest (average 36 percent) in late afternoon before sunset. The average relative humidity is 50 percent.

The Pueblo area receives an average of 8.9 inches of rainfall from April through August and an annual average of 13.0 inches. The heaviest recorded rainfall event for the area was 6.2 inches in April 1942. Summer precipitation over the plains comes largely from thunderstorm activity and is sometimes extremely heavy (Doesken et al. 2003). Localized rains in excess of 4 inches can fall in a few hours, contributing to local flooding. More commonly, however, it is very dry. Annual average precipitation ranges from less than 12 inches in the Arkansas Valley between Pueblo and Las Animas to almost 18 inches in extreme northeastern and southeastern corners of the state. Less than the annual average amount of precipitation falls in many years, with only half or less of the long-term average falling in some years. March generally has the most snowfall, averaging 6.0 inches. The maximum monthly total of snowfall on record (at the Pueblo Memorial Airport with records to 1954) occurred in November 1991, with 25.6 inches. The total average annual snowfall for the area is 30.6 inches.

Winds in the Pueblo area are most common from the north-northwest and least common from the east-southeast. Dry and strong winter winds contribute to the aridity of the area. The attributes for wind speed and direction on PCD can differ from those monitored at nearby weather stations (on the Pueblo Memorial Airport). Areas very near the mountains are subject to periodic, severe turbulent winds from the effects of high westerly winds over the mountain barrier. These winds are sometimes referred to as "chinook winds" when they warm, and "bora winds" when they are associated with a strong cold frontal passage downslope off of the mountains. PCD is farther from the mountains, and wind there is not as influenced by the mountains. The southeast Colorado region is generally considered an area with plenty

of sunshine. On average, the chance for the sun to be shining ranges from 71 percent in December to 81 percent in September. The overall annual average is 76 percent chance of sunshine.

2.b.(2) Ecoregion

PCD is in the Central Shortgrass Prairie (CSP) ecoregion. The CSP ecoregion encompasses approximately 56 million acres and includes parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, Texas, and Wyoming. The landscape includes plains and table lands dominated by shortgrass species such as buffalo grass (*Buchloe dactyloides*), blue grama (*Bouteloua gracilis*), and western wheatgrass (*Pascopyrum smithii*). The grasslands are dissected by streams (which are often ephemeral), canyons, buttes, and badlands. The CSP is characterized by limited precipitation, hot summers, and cold winters, with grazing, periodic fires, and drought being the primary historical natural disturbances that shaped the landscape and species present.

2.b.(3) Geology

Colorado generally was covered by a Tertiary Period-derived mantle of unconsolidated fluvial material deposited from the outwash of river systems flowing out of the mountains to the west. The fluvial material has been largely washed away in the Southwestern Tablelands, where PCD is located, whereas in the High Plains to the east fluvial material still remains. The relatively permeable terrace alluvium upon which the depot is situated is a Holocene/Pleistocene formation of the Quaternary Period that can be up to 100 feet thick (Rust 1998). Underlying this is the nearly impermeable layer of Pierre Shale of the Upper Cretaceous Series, which in turn is underlain by additional layers of impermeable shale and limestone. The next significant water-bearing unit is the Dakota Sandstone of the Lower Cretaceous Series, at a depth of approximately 2,200 feet (Welder and Hurr 1971). The Dakota Sandstone and the underlying Purgatoire Formation, a conglomerate of shale and sandstone, make up the Dakota-Cheyenne aquifer (Robson and Banta 1987). Scott (1969) provides detailed descriptions of the formations underlying PCD to the Dakota Sandstone, including the rich fossiliferous qualities of each stratum. Robson and Banta (1987) describe the formations that overlie the igneous and metamorphic rocks formed during the Precambrian Eon in greater depth.

More recent and site-specific surficial geologic investigations were conducted by Dr. Richard Madole in 2003. Dr. Madole indicates that the surficial geology of PCD can be divided into nine stratigraphic units, of which four are eolian and five are fluvial. These date from a recent historic and protohistoric channel alluvium to an early-middle Pleistocene terrace alluvium (Madole 2003).

2.b.(4) Soils

Pueblo Chemical Depot's uplands consist primarily of three soil types: Fort loam (45 percent), Valent sand (14 percent), and Arvada-Keyner association (11 percent). Five other soil types (Otero sandy loam, Bankard sand, Razor clay, Limon silty clay, and Olney sandy loam) each constitute approximately 4–6 percent of the depot, and other soil types each account for less than 4 percent of the depot’s soils. The Fort loam and Valent sand soils are derived from wind-eroded sedimentary rock. The Otero sandy loam is alluvium derived from shale. These soils are deep (more than 80 inches to a restrictive layer), well-drained, and do not flood or pond. They occupy the central portion of PCD where the cantonment area and ASA are, with the Fort loam soil being by far the most prominent soil type in the central portion of the depot.

Soils along Chico Creek on the west side of the depot and Boone and Haynes creeks on the east side of the depot are a mixture of Valent sand, Arvada-Keyner association, and various other soil types, each or the latter representing from less than 1 percent to 5.5 percent of the PCD area. Along the western side, Chico Creek enters the depot in the north where Limon silty clays are found, but generally the stream flows through Bankard sand. Between the stream and the predominant Fort loam area in the middle of the depot is a strip of sand and sandy loam soils (Valent sand and Otero sandy loam). Boone and Haynes creeks run through predominantly Arvada-Keyner association soil, with Fort loam dominant again in the

area between the creeks in the southeast corner of the depot. These soils are also generally deep and well-drained with limited or no flooding or ponding.

The most common use for these soils is grazing. Of the major soil types on PCD, only Fort loam has good farming potential, and only if irrigated. The area soils could provide good wildlife habitat if water is made available.

2.b.(5) Groundwater

PCD is underlain by two distinct alluvial aquifers: the terrace alluvial aquifer and the Chico Creek alluvial aquifer. The source of groundwater for these aquifers is predominantly underflow from the north, which was approximated to be 900 acre-feet per year (1.24 cubic feet per second [cfs]) in 1971 (Welder and Hurr 1971). Total groundwater inflows and outflows were later estimated at 1.67 cfs and 1.66 cfs, respectively (Rust 1998). The influence of precipitation on these aquifers is negligible because of the small amount of annual precipitation combined with the high evaporation rate in the area. In very wet years in areas composed of sandy soils with low water retention capabilities, however, precipitation can recharge the aquifer system to some extent. Much of the moisture that does infiltrate the soil during the growing season is taken up by vegetation. Both the terrace alluvial and the Chico Creek alluvial aquifers feed into the Arkansas River alluvial aquifer that underlies the Arkansas River valley south of PCD. These aquifers flow either directly as underflow from the alluvium or indirectly as discharge from seeps that discharge at the contact between the alluvial aquifers and bedrock along the irregular escarpment that roughly follows PCD's southern boundary.

The terrace alluvial aquifer underlies the eastern three-fourths of the depot. The alluvial deposits range from 40 to 95 feet thick. The saturated aquifer ranges from 0 to 40 feet thick, with an average thickness of about 20 feet (Rust 1998). Water in the aquifer in the northern part of the depot flows south. Flow in the southwestern part of the aquifer is more variable, flowing west, south, and east and controlled primarily by the contours of the underlying bedrock surface. The terrace alluvial aquifer is hydraulically connected with the Arkansas River aquifer, although only by a narrow zone of alluvium at the unnamed creek immediately south of solid waste management unit (SWMU) 14. The terrace alluvial aquifer is connected to the Chico Creek alluvial aquifer in the southwestern part of the depot.

Water quality in the terrace alluvial aquifer, as measured by concentrations of dissolved solids, is generally less than 500 milligrams per liter (mg/L), except in the vicinity of the administrative area. Analyses indicate that most of the water in this aquifer is dominated by the sodium cation and usually the bicarbonate anion, with sulfate present in substantial concentrations. The groundwater is also influenced by naturally occurring selenium, resulting from contact with the Pierre Shale bedrock layer.

The Chico Creek alluvial aquifer underlies the western one-sixth of the depot, consistent with the course of Chico Creek itself. The total thickness of the Chico Creek alluvium ranges from about 16 to 41 feet, in which approximately 0 to 30 feet are saturated. As with the terrace alluvial aquifer, water flow is generally southward except along margins of the northern portion of the aquifer on the depot where localized ingress of water causes some variation in directions of flow. The Chico Creek alluvial aquifer is hydraulically connected to the Arkansas River alluvial aquifer. Concentrations of dissolved solids in the Chico Creek alluvial aquifer are somewhat less than 1,000 mg/L. Analyses indicate that the water in this aquifer is dominated by the sodium cation and the bicarbonate and sulfate anions, with the sulfate more predominant in the southern regions.

A deeper aquifer, the Fort Hays-Codell aquifer, is in adjacent subunits of the Niobrara Formation and the Carlile Shale as a thin layer of nonpotable water possibly suitable for irrigation and livestock uses.

The Dakota Sandstone and the underlying Cheyenne Sandstone Member of the Purgatoire Formation, both of the Early Cretaceous Epoch, make up the Dakota-Cheyenne aquifer. This aquifer, approximately 2,200 feet below surface and 50 to 100 feet thick, is a reliable source of water suitable for domestic uses.

Underlying the Dakota-Cheyenne aquifer are the Entrada-Dockum, Lyons, and Fountain aquifers, which are generally thin, have marginal water quality, and are poorly defined by data.

2.b.(6) Surface Waters

As the name implies, Lynda Ann Reservoir is a man-made feature (Figure 8), dredged out and dammed in the Boone Creek drainage system in 1953 to provide a training and testing site for amphibious vehicles. It is fed primarily by groundwater from the ephemeral Boone Creek and by runoff from the surrounding area. During the summer months, the reservoir's water is often high in suspended particulate matter, making it appear green and turbid. During drought years, the reservoir dries up. Most of the other ponds and wetlands overlying the terrace alluvial aquifer on PCD are contact springs, where the shallow groundwater erupts from bluffs or otherwise incised features. Significant among these are the spring pond along the upper Boone Creek drainage, the Ammunition Workshop Site (AWS) Pond (Figure 8) that terminates a drainage from a seep in the southwestern portion of the depot, and unique seeps, called pocket fens, along the bluffs in northwestern and southeastern PCD.

Chico Creek flows down the west side of PCD (Figure 8). During periods of average annual precipitation, the creek is perennial as it flows through the north and central portions of the depot. In the southern one-third, flowing water is evident only after local or upstream precipitation events. This periodicity is especially evident during the summer season; water is typically more abundant during the winter months. Water abundance in the stream system is undoubtedly influenced by a number of factors, some of which might be general climatological patterns and events, characteristics of the underlying soils, historical uses such as cattle grazing, and invasive nonnative species such as tamarisk. Upstream management practices can have a strong influence in the quality and quantity of water in lower Chico Creek.

The two other primary drainage systems on the depot are Boone Creek and Haynes Creek (Figure 8). Boone Creek begins approximately 1.5 miles south of the depot's northern border, runs almost due south to Lynda Ann Reservoir, and continues south to PCD's boundary. Haynes Creek, which enters the depot along the northern boundary, crosses the northeastern corner of the depot, and exits the east side. A much smaller drainage system that originates near SWMU 14 exits at the same point. This system is generally referred to as "the unnamed creek." All three drainage systems are ephemeral or intermittent and flow south to the Arkansas River.

2.b.(7) Wetlands

The USFWS National Wetlands Inventory (NWI) office conducted a wetlands inventory for PCD, which produced a map detailing the wetland resources for the area in late 1999. In accordance with the NWI classification system, all of the depot's wetlands fall into three general categories: freshwater pond, freshwater emergent wetland, freshwater forested/shrub wetland, and riverine. At the time this report was prepared, the pond and freshwater emergent wetland systems consisted of standing and marshy waters, from the 17-acre Lynda Ann Reservoir and the 1.0-acre AWS pond to small sites with no visible water but characterized by hydric vegetation (Figure 9). In contrast, the riverine systems, most of which on the depot are associated with Chico Creek and the AWS pond, were characterized by linear drainage patterns that at least intermittently contained flowing water. PCD had approximately 36 acres of freshwater pond wetlands, 32 acres of freshwater emergent wetlands, 0.50 acre of freshwater forested/shrub wetland, and 451 acres of riverine wetlands, for a combined total of 519.5 acres of wetlands, according to the current NWI (Figure 9). (Note that NWI's definitions for wetlands are biologically derived and are different than those of USACE, which have regulatory implications.) The quantity of wetlands on PCD has most likely changed over the last 20 years with changes in water level in Lynda Ann Reservoir, the AWS pond and flow in Chico Creek.

2.b.(8) Landcover

PCD is located on rolling prairie in southeastern Colorado, east of the city of Pueblo, occupying about 23,000. PCD makes up the southern portion of an important landscape conservation area – Chico Basin – a large (>200,000 acre) intact prairie landscape. PCD and the larger Chico Basin are best characterized as a high plains ecosystem composed of a mosaic of vegetation types including shortgrass prairie, sandsage shrubland, greasewood shrubland, and riparian vegetation.

The shortgrass prairie is the matrix community at PCD, occupying nearly 11,500 acres or about 50 percent of PCD. Most of the shortgrass is dominated by blue grama (*Chondrosum gracile*), but a few areas are dominated by either alkali sacaton grass (*Sporobolus airoides*) or galleta grass (*Hilaria jamesii*), depending on soil type. Some areas, especially where prairie dogs occur, may also have a significant portion of three-awn grass (*Aristida spp*.). Grass canopy cover generally averages between 35-50 percent and bare ground generally averages between 20-50 percent.

The sandsage-dominated prairie occupies approximately 4,000 acres at PCD and is best characterized as a very sandy substrate dominated by sandsage (*Oligosporus filifolius*) with an average of 15 percent canopy cover. The ground cover is often sparse with a mix of grasses and forbs, although grasses are normally more dominant than forbs (at least during August and September). Blue grama, needle-and-thread grass (*Stipa comata*), and sand dropseed (*Sporobolus cryptandrus*) are the most common grasses, but they seldom exceed 10 percent canopy cover. Plains buckwheat (*Eriogonum effusum*), zinnia (*Zinnia grandiflora*), and sunflowers (*Helianthus spp*.) are common forbs, and bush morning glory (*Ipomoea leptophylla*) and yucca (*Yucca glauca*) are common shrub-like plants.

This shrubland occupies approximately 2,400 acres on PCD with the largest occurrence along Boone Creek. This community is recognized by the presence of greasewood (*Sarcobatus vermiculatus*) with an average of 3 percent canopy cover; rabbitbrush (*Chrysothamnus nauseosus*) may co-dominate and cholla (*Cylindropuntia imbricata*) may be present. The grass cover averages 40 percent and is often dominated by alkali sacaton grass, blue grama, or galleta grass. On about 25 percent of the acreage, erosion has removed the surface layer, leaving barren slick spots.

The wooded riparian habitat is found primarily on the west portion of PCD along Chico Creek. The dominant vegetation of this wooded riparian area is plains cottonwood (*Populus deltoides*) with native bunch grasses, whereas the southern portion of Chico Creek is sparsely vegetated with some coyote willow (*Salix exigua*) and tamarisk (*Tamarix ramosissima*).

2.c. General Biotic Environment

2.c.(1) Species of Conservation Concern

There are no federally listed threatened or endangered (T&E) species known to occur on PCD. See sections 4.a., 4.d., 4.e., for more information on other species of conservation concern.

2.c.(2) Fauna

Information related to species and management of animals on PCD can be found in the following locations:

- 4.a. Species of conservation concern
- 4.d. Fish and wildlife management
- 4.e. Migratory birds
- 4.f. Invasive species management
- 4.g. Pest management
- 4.q. Bald and Golden Eagle Management

2.c.(3) Flora

Information related to species and management of vegetation on PCD can be found in the following locations:

- 2.b. General physical environment and ecosystems
- 4.f. Invasive species management
- 4.g. Pest management

3. ENVIRONMENTAL MANAGEMENT STRATEGY AND MISSION SUSTAINABILITY

3.a. Supporting Sustainability of the Military Mission and the Natural Environment

3.a.(1) Integrating Military Mission and Sustainable Land Use

This INRMP supports the Army mission by prescribing ways to conserve and lands upon which the mission is critically dependent, describing potential recreational opportunities associated with natural resources that are available to PCD personnel as well as others, and describing impacts of the military mission upon natural resources and vice versa. For the impacts of natural resource management on the military mission, please see Section 3.a.(2) below.

3.a.(2) Impacts of Natural Resource Management on the Military Mission

Environmental management office staff personnel, both from PCD and USFWS, strive to minimize or eliminate both permanent and temporary restrictions on the military mission, by means of the following activities.

3.b. Natural Resources Consultation Requirements

Federal agencies shall utilize their authorities in furtherance of the purposes of the Endangered Species Act (ESA) by carrying out programs for the conservation of endangered species and threatened species. Under Section 7 of the ESA, PCD is required to (1) consult with the USFWS to ensure that any authorized action funded or carried out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat unless granted an exemption by the USFWS, and (2) consult if there is reason to believe that an endangered or threatened species may be present and likely to be affected by the action. Due to the lack of and/or infrequency of protected species at PCD, not very many proposed projects or actions require consultation; in fact, formal consultation is rarely needed. Only those actions that may affect a listed species or a majority portion of a migratory bird population would require formal consultation. EMO staff will obtain approval before supporting USFWS's or National Oceanic and Atmospheric Administration-Fisheries' introduction and/or reintroduction of federal and state-listed, proposed, and candidate species on Army lands (AR 200-1, 13 Dec 2007). Consultation with the USFWS may be needed to deal with specific issues related to the Bald and Golden Eagle Protection Act (BGEPA) or MBTA.

There is regular communication with CPW regarding game and non-game management and monitoring. EMO and USFWS staff meet annually with CPW biologists to discuss natural resources management and projects on PCD. In addition, nuisance wildlife issues occasionally require consultation with CPW law enforcement personnel and support from U.S. Department of Agriculture (USDA)-APHIS-Wildlife Services.

3.c. NEPA Compliance

The purpose of NEPA review is to ensure that potential environmental consequences of proposed actions are considered before decisions to proceed with those actions are made, and that those decisions include, to the extent practical, measures to avoid, minimize, or mitigate adverse environmental impacts.

EMO is responsible for ensuring that the appropriate level of NEPA analysis, including public involvement when appropriate, and subsequent documentation is completed before decisions are made to execute all applicable PCD actions (e.g., construction projects, remediation and restoration, and hazardous waste cleanup).

3.d. Partnerships and Collaborative Resource Planning

This INRMP has been prepared in cooperation with the USFWS and CPW, as mandated by AR 200-1, paragraph 4-3d(1)(a); DoDI 4715.03, Enclosure 3, and the Sikes Act. PCD collaborates with other entities (see Section 1.d.) on natural resource issues. Natural resources staff collaborate with others through organized groups such as the Front Range Ecoregional Partnership (FREP), a working group of other DoD installations, as well as the Central Shortgrass Prairie Partnership, a group consisting of nonprofits, state and federal agencies, academic institutions, and private landowners focused on conservation in the shortgrass ecoregion. By working towards common conservation goals in the region, PCD reduces the likelihood that restrictions implemented to protect populations and habitats of rare species will negatively impact the military mission.

3.e. Public Access and Outreach

3.e.(1) Public Access and Outdoor Recreation

Currently, there are no recreational activities (e.g., hunting and fishing) on PCD. Recreational hunting opportunities may be pursued on PCD in future years upon approval by the Commander.

3.e.(2) Public Outreach and Education

Installation personnel routinely participate in public outreach and education programs in regards to natural resource management. Examples include visiting local schools, universities, and leading education programs on the installation; Earth Day; public hearings, and wildlife management and conservation efforts.

3.f. State Comprehensive Wildlife Plan

This INRMP and the natural resources programs on PCD work in concert with the Colorado State Wildlife Action Plan (available on the CPW website). As previously mentioned, promoting the conservation of rare species throughout the state reduces the likelihood that future restrictions will be placed on PCD, thus limiting the ability of the Army to fulfill its mission.

4. PROGRAM ELEMENTS

4.a. Species of Conservation Concern

This section includes an overview of species that are rare or declining, and are a conservation concern to federal and state agencies. The goal of management for these species is to benefit the Army by reducing the likelihood that the presence of these species or their habitat could limit the installation's mission. Species of conservation concern include: (1) federal listed, proposed, candidate, and petitioned species, and critical habitat, (2) Army Species at Risk, (3) state-listed species, (4) USFWS Birds of Conservation Concern, (5) Colorado Natural Heritage and CPW species of special concern, and (6) CPW Species of Greatest Conservation.

Federal Species of Concern

The USFWS is responsible for administering the Endangered Species Act (ESA). Species protected under the ESA are listed as endangered or threatened. An endangered species is one that is likely to become extinct throughout all or a large portion of its range, while a threatened species is likely to become endangered in the near future. Proposed species are plants and animals for which the USFWS has written a proposed rule to list as either threatened or endangered. Proposed rules undergo a comment period before becoming final and can be withdrawn prior to a final rule to list a species. Candidate species are "plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA but for which development of a proposed listing regulation is precluded by other higher priority listing activities." A species that is "under review" has gone through a 90-day status review, during which the USFWS has found that there is substantial information that the petitioned listing may be warranted. These species then move into a 12-month review to decide if they should be listed. A petitioned species is one requested for listing as threatened or endangered by an interested person or group, but has not yet undergone a 90-day review. Critical habitat, which may or may not be included with a federal listing of a species, is protected habitat required for the recovery of a species.

Federal Threatened and Endangered Species

Currently, there are no federally listed species occurring on PCD. However, in October 2020, the USFWS listed the eastern black rail as threatened under the ESA. Currently, it is unknown if eastern black rails occur in wetland areas on PCD. Annual spring and summer surveys along with a habitat assessment, will be conducted at Lynda Ann Reservoir and the upper sections of Chico Creek to determine presence/absence of the eastern black rail.

Federal Proposed Species

There are no federally proposed species occurring on PCD.

Federal Candidate Species for Listing

There is one federal candidate species occurring on PCD and that is the monarch butterfly that migrates through Colorado and can be found on PCD. In December 2020, the USFWS determined that the monarch butterfly is a candidate for listing under the ESA, and its status will be reviewed each year until it is no longer a candidate.

Species under Federal Review

In September of 2016, the USFWS created a 7-Year National Listing Workplan. The workplan will allow the USFWS to meet its current and future ESA obligations. Species that have been petitioned for federal protections under the ESA are listed in this workplan, and the following species in this section are those that occur or have the potential to occur on PCD.

The desert massasauga (*Sistrurus catenatus edwardsii*), under review since 2012, has the potential to occur on PCD. Baseline reptile surveys, if funded, would help to clarify the presence and habitat associations of the desert massasauga.

The little brown bat (LBB; *Myotis lucifiugus*) has been under review since 2010. Throughout the eastern portion of its range, LBB populations have been severely reduced by white-nose syndrome (WNS), with hibernacula counts declining by an average of 90 percent. In February 2018 the International Union for Conservation of Nature (IUCN) listed the LBB as globally endangered because of the threat posed by WNS. Baseline bat surveys, if funded, would help to clarify the presence and habitat associations of the little brown bat.

The plains spotted skunk (*Spilogale putorius interrupta*), under review since 2012, has the potential to occur on PCD. One of the few documented cases of a plains spotted skunk in Colorado involved a road kill in Pueblo County. Baseline mesocarnivore surveys, if funded, would help to clarify the presence and habitat associations of the plains potted skunk.

The tricolored bat (*Perimyotis subflavus*) was petitioned for listing in 2016. In December 2017, the USFWS 90-day finding determined the tricolored bat may warrant listing and is currently on the status review workplan. As of May 2019, the workplan lists the tricolored bat action plan as, "12-month finding on a petition to list a species" (USFWS 2019). This bat has been devastated by the invasive fungal disease known as WNS. As WNS has spread across the continent, numbers of the tri-colored bat have plummeted, along with a numbers of other bat species. Mortality rates up to 100 percent have been reported in affected hibernacula. As a result, the Center of Biological Diversity has petitioned the U.S. Fish and Wildlife Service (USFWS) to list the tri-colored bat (Center for Biological Diversity, 2016) as threatened or endangered under the ESA of 1973, as amended. Baseline bat surveys, if funded, would help to clarify the presence and habitat associations of the tricolored bat.

The western bumble bee (*Bombus occidentalis*), which has been under review since 2016, has the potential to occur on PCD, as it is has been found in multiple locations along the Front Range. Baseline arthropod surveys, if funded, would help to clarify the presence and habitat associations of the western bumble bee.

There are currently no species on PCD that have been petitioned and are still in the 90-day review phase.

Critical Habitat

Critical habitat is not designated on PCD for any species.

Army Species at Risk (SAR)

Army SAR are species that can significantly impact the Army mission if listed as threatened or endangered. The objective of the Army SAR initiative is to conserve species prior to listing. NatureServe, which prepared the initial DoD SAR report and has issued several subsequent updates, in its 2014 update define a SAR as:

" …native, regularly occurring species in the United States that are not federally listed under the U.S. Endangered Species Act, but are either:

- *Candidates* for listing under the U.S. Endangered Species Act, or
- *Proposed* for listing under the U.S. Endangered Species Act, or
- *Critically imperiled* (rounded global rank of G1 or T1) or *Imperiled* (rounded global rank of G2 or T2) plants and animals, according to the NatureServe conservation status rank criteria, or
- *Vulnerable birds* with a rounded global rank of G3 according to the NatureServe conservation status rank criteria or an IUCN status of CR, EN, VU, or NT."

According to the above definition, plus species included on prior SAR lists, Pueblo County has the following SAR species: two species of bird (spotted owl, *Strix occidentalis*) and (Mexican spotted owl, *Strix occidentalis lucida*), one species of fish (Cutthroat trout, *Oncorhynchus clarkii*) and two plant species: golden blazingstar (*Mentzelia chrysantha*), and roundleaf four o'clock (*Mirabilis rotundifolia*). The species listed above are not located on PCD.

State Listed-Species

There are three state-listed species on PCD: Southern Redbelly Dace (endangered), Arkansas Darter (threatened), and Burrowing Owl (threatened). The only dace population occurs in the AWS pond. The darter has been documented in the upper reach of Chico Creek in the far northwest corner of the installation. These two species of fish are not protected by the ESA, but are protected by state regulation and FC Reg 200-6. USFWS wildlife staff conduct fish surveys annually in the AWS pond for dace. The burrowing owl is widely distributed across PCD but occupies only a small percentage of available habitat. The owl is generally present March-October, but has been observed in prairie dog colonies on PCD into November and December. Burrowing owls are primarily restricted to black-tailed prairie dog colonies during the nesting season, but may occasionally nest in other natural burrows. The owl is not protected by the ESA but is protected by the MBTA and state regulation. Breeding surveys are conducted annually, in conjunction with black-tailed prairie dog surveys.

Birds of Conservation Concern

Many bird species of conservation concern for the shortgrass prairie occur on PCD. Included in this group are USFWS Birds of Conservation Concern (16 species). These species are detailed in Migratory Bird Management, section 4.e. In addition, PCD personnel annually conduct point-count surveys in grasslands and annually record observed nesting locations of Burrowing Owls, in order to monitor nesting trends. The BGEPA protects both golden and bald eagles. Both species have the potential to occur on PCD. Details regarding eagle management are found in the Bald and Golden Eagle Management, section 4.q.

Colorado Natural Heritage Program and CPW Species of State Special Concern

This group includes fish (1 species), amphibians (3 species), reptiles (1 species), birds (7 species) mammals (2 species). PCD biologists record and map all sightings of these species. The black-tailed prairie dog, a keystone species of conservation concern integral to the survival of other sensitive species, are monitored annually on PCD for active colonies and the presence of plague. Species dependent on black-tailed prairie dogs on PCD include Golden and Bald Eagles, Ferruginous Hawks, Mountain Plovers, Burrowing Owls, and the black-footed ferret (if a reintroduction occurs on PCD in the future), along with numerous species of reptiles and invertebrates. Prairie dogs are the primary prey of eagles on the installations, and modify grassland habitat making it suitable for Burrowing Owl and Mountain Plover nesting.

Recurring Actions for Managing Threatened Species, Candidate Species, and Species of Conservation Concern on PCD

(Please note: The following proposed actions are in priority order from 1 to 11. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.) Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. Conduct annual spring and summer eastern black rail surveys at Lynda Ann Reservoir and the upper sections of Chico Creek.
2. Monitor Monarch butterfly populations on PCD and provide pollinator gardens.
3. Continue annual monitoring of black-tailed prairie dog colonies for the presence of Burrowing Owls and annual monitoring for colony extent and plague status.

4. Continue annual prairie dog translocations to supplement the existing PCD populations for the future reintroduction of black-footed ferrets.
5. Continue dusting and exploring other alternatives as needed to prevent plague in prairie dog colonies important to nesting and wintering eagles and the Ferruginous Hawk, and nesting Burrowing Owls.
6. Continue annual monitoring of Southern Redbelly Dace in the AWS pond to monitor populations.
7. Continue to inventory Army SAR populations.
8. Continue mapping distribution of sensitive species, annually as encountered.
9. Conduct baseline inventory, if funded, for bat populations.
10. Conduct baseline inventory, if funded, for amphibian and reptile populations.
11. Annually survey for and maintain inventory of raptor nests.

4.b. Wetlands Management

Wetland management on PCD consists of all elements related to compliance with the Clean Water Act, Section 404, as well as applicable executive orders, Army regulations, and state laws. The wetlands management program adheres to provisions of the Clean Water Act to ensure protection from irresponsible and unregulated discharges of dredged or fill material that could permanently alter or destroy valuable water resources on PCD. Executive Order 11990, *Protection of Wetlands* (1977) and the Clean Water Act require no net wetland losses on federal lands in the United States. The goal of the wetlands management program is no net loss of wetlands on PCD.

The USFWS National Wetlands Inventory (NWI) office conducted a wetlands inventory for PCD, which produced a map detailing the wetland resources for the area in late 1999 (Figure 9). In accordance with the NWI classification system, all of the depot's wetlands fall into three general categories: freshwater pond, freshwater emergent wetland, and riverine. At the time this report was prepared, the pond and freshwater emergent wetland systems consisted of standing and marshy waters, from the 17-acre Lynda Ann Reservoir to small sites with no visible water but characterized by hydric vegetation. In contrast, the riverine systems, most of which on the depot are associated with Chico Creek, were characterized by linear drainage patterns that at least intermittently contained flowing water. PCD had approximately 35 acres of freshwater pond wetlands, 31 acres of freshwater emergent wetlands, and 448 acres of riverine wetlands, for a combined total of 514 acres of wetlands, according to the NWI. (Note that NWI's definitions for wetlands are biologically derived and are different than those of USACE, which have regulatory implications.) The quantity of wetlands on PCD has most likely changed over the last 20 years with changes in water level in Lynda Ann Reservoir and the AWS pond, and flow in Chico Creek.

Wetland Protection

Proposed projects or activities that may impact wetlands and the Waters of the United States (often referred to as 'jurisdictional wetlands') must be reviewed for compliance with the Clean Water Act (CWA) Section 404. Construction projects disturbing over one acre of land require a National Pollutant Discharge Elimination System (NPDES) permit for point source discharge of stormwater and must operate under the U.S. Environmental Protection Agency's (USEPA's) Construction General Permit. Review is accomplished through the EMO NEPA reviews. Projects that may impact or be in close proximity to wetlands or Waters of the United States must be reviewed by EMO. Designs and projects submitted by engineering have to be reviewed by natural resource subject matter experts as part of the NEPA review. Per the CWA, Section 404 (b)(1), there are three tiers of procedures for reducing or eliminating potential net losses of wetlands. The three tiers are: 1) avoidance of impacts whenever possible; 2) minimization when impacts cannot be avoided; and 3) mitigation for impacts that cannot be minimized.

There are three types of permits that may be used based on the level and type of impact. They are the Regional General Permit (RGP) for PCD, the Nationwide Permit (NWP) and the Individual Permit. The proponent must factor into its project timeline up to 180 days, under normal circumstances, for USACE

review if the latter two permits are used. Modifications during the review process, or anything that might cause the review process to be elevated, may delay the review even more. Projects requiring an EIS may take as long as three years to obtain a CWA permit.

Activities not covered by the RGP may be covered by one of 52 NWPs. The project proponent, in coordination with the DPW, may identify the permit that fits the project and follow the guidelines of that permit. Based on these guidelines the proponent may be required to submit a request in writing to the USACE in Pueblo for a permit. Even if a proposed project or activity is covered by a NWP, in most cases the proponent must provide a pre-construction notification to the USACE in Pueblo, and await its confirmation of coverage. To avoid any confusion over the interpretation of the permits, the proponent should prepare a short description of the project with the location and area of disturbance and submit it to the USACE office for its direction. This will reduce the guess work and get the USACE involved early in the process.

For activities not covered by the RGP or a Nationwide Permit, the proponent must obtain an Individual Permit. Once the permit is obtained the proponent must follow the requirements in the permit. This includes the placement of BMPs, monitoring of the site and regular reporting to the USACE. If a permit is required, but not obtained, work must stop until the permit is obtained. The USACE may deem it necessary to issue a Notice of Violation to stop the work and seek restoration or mitigation of the site.

All proposed projects should go through the EMO. However, each project proponent needs to be aware that they will have to remain involved throughout the process. The following is a list of the main steps a project proponent must complete.

1. Submit the project for EMO review.
2. If project is covered by the RGP, report the completed work to the EMO for inclusion in the quarterly report to the USACE.
3. If the project may be covered by one of the NWPs, submit a pre-construction notification to the Pueblo USACE, with a courtesy copy to the EMO.
4. If the project is not covered by the RGP or an NWP, apply to the Pueblo USACE for an Individual Permit, with a courtesy copy to the EMO.
5. Comply with the terms of the permit.
6. Coordinate any changes to the project with the Pueblo USACE and the EMO.
7. Implement mitigation measures if required by the permit or NEPA.
8. Monitor the success of mitigation measures for the period of time specified in the permit or NEPA document.
9. Submit annual reports or certifications of compliance to Pueblo USACE.

Water Quality

Sediment — Erosion is a natural process in the semi-arid region of eastern Colorado. Gullies transport sediment during flash flood events. At PCD, DPW and EMO are focused on minimizing accelerated erosion, which occurs above the natural level. Erosion can be accelerated by construction activities that damage the vegetation cover. When vegetation is removed, soil is exposed and more likely to be moved.

Stormwater — Currently PCD does not have a stormwater program.

Recurring Actions for Wetlands Management

(Please note: The following proposed actions are in priority order from 1 to 6. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.) Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. Ensure no net loss of wetland acreage on PCD.
2. Use the NEPA process to evaluate impacts on wetlands, which could result from new construction or other activities, and assist with coordination between proponent and USACE.
3. Assess potential impacts to the eastern black rail projects from projects at Lynda Ann Reservoir and the upper sections of Chico Creek.
4. Submit quarterly RGP reports, and review/update the RGP on a 5-year basis.
5. Maintain/update database of Waters of the U.S. delineations with the USACE.
6. Conduct wetland delineations on Water of the U.S., if funded.

4.c. Conservation Law Enforcement

The goal of the Conservation Law Enforcement Program (CLEP) is to help ensure the safety and security of PCD by enforcing all natural resource laws, statutes, and regulations on the installation. Currently, the PCD CLEP is supported by Fort Carson Army Installation and its CLEP. The CLEP is responsible for actively enforcing local, state, and federal environmental, natural and cultural resource laws and regulations. 16 USC 670e-1, a part of the Sikes Act, states, "All Federal laws relating to the management of natural resources on Federal land may be enforced by the Secretary of Defense with respect to violations of the laws that occur on military installations within the United States." 10 USC 2671, *Military reservations and facilities: hunting, fishing, and trapping*, mandates the Secretary of Defense to require that all hunting and fishing on an installation be in accordance with the fish and game laws of the state in which it is located. This statute also says that an act or omission committed on the installation that would have been punishable under state law be subject to a like punishment.

PCD currently does not have any Conservation Law Enforcement Officers (CLEOs) on the installation. Pursuant to the Commander's inherent responsibility to provide for the safety and security of the installation, CLEOs are duly commissioned law enforcement officers specially trained and delegated the authority to enforce all natural and cultural resource laws, statutes and regulations on PCD. CLEOs are provided by Fort Carson Army Installation. As stated earlier, this INRMP does not enlarge or diminish the existing responsibilities of the USFWS or the CPW or the DoD. Certain details of law enforcement operations may evolve over time as part of the annual review process of this INRMP, and be captured in written mutual understandings or agreements. If appropriate, any such changes would be included in future updates of this INRMP.

Priorities

Conservation law enforcement activities are prioritized based upon the impact violations may have on state and federally mandated requirements, animal species and habitat identified as critical, and on the operations of the installation. The following list of priorities is not inclusive and may encompass other concerns as the mission dictates. Enforcement emphasis will change seasonally and annually, but these priorities will not change:

Priority 1 – Endangered Species Act (ESA) Archeological Resource Protection Act (ARPA) Native American Graves Protection and Repatriation Act (NAGPRA) Bald and Golden Eagle Protection Act (BGEPA)

Priority 2 – Migratory Bird Treaty Act (MBTA) Lacey Act (combats trafficking in illegal wildlife, fish, and plants) Game law compliance inspections

Priority 3 – Hazardous Waste Disposal Violations Clean Water Act Clean Air Act

Recurring Actions for Law Enforcement

(Please note: The following proposed actions are in priority order from 1 to 3. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.)

Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. Coordinate with Fort Carson Army Installation CLEP program.
2. Ensure military and civilian personnel and activities are in compliance with natural, cultural, and environmental laws and regulations on PCD.
3. Coordinate enforcement activities with other stakeholder agencies and organizations.

4.d. Fish and wildlife management

PCD lands support a broad array of wildlife and ecosystems that are integral to the Army mission and to landscape-scale natural resources management in southeastern Colorado. Ensuring Army lands meet sustainment of biological diversity of terrestrial and aquatic ecosystems is the overall goal for wildlife management on PCD. The species included in this section are vertebrate game and nongame species with regionally or nationally secure populations that are not covered in the Species of Conservation Concern, Migratory Birds, and Eagle Protection sections.

Deer and Pronghorn

This INRMP supports the ability of CPW with support from USFWS to conduct future deer and pronghorn aerial surveys annually on PCD. Aerial surveys will be used to calculate population estimates on PCD. Harvest levels in the local area are set by CPW to meet Data Analysis Unit (DAU) population and sex ratio goals. The DAU is a CPW management area that represents the year-round geographic range of a big game herd, and is composed of one or more game management units. These population estimates and ratios would be required to support and develop a recreational hunting program on PCD in the future with commander approval.

Nongame Species

Inventory and monitoring of nongame species are conducted annually on PCD. T& E Species and Species of Conservation Concern are the primary focus of all nongame inventory and management. Surveys for sensitive and rare species are generally conducted at the community level and are therefore inclusive of species groups identified in this section.

Native Fish

Native fish found on PCD include Fathead Minnows, Stonerollers, Red and Sand Shiners, and Black Bullheads in Chico Creek. Black Bullheads are also found in the AWS pond. Introduced species include Southern Redbelly Dace (a state-listed endangered species) in the AWS Pond. Annual surveys are completed for the Southern Redbelly Dace.

Amphibians and Reptiles

A comprehensive inventory, (i.e., Army Planning Level Surveys), of amphibians and reptiles was last conducted on PCD in 2000. Most species records are opportunistic sightings reported by USFWS biologists during execution of other field projects. For amphibians, plains leopard frogs and barred tiger salamanders are commonly observed in and around aquatic systems. American bullfrogs, a nonnative species, are common around almost all water sources on the depot. In 2006, a Couch's spadefoot toad was observed on PCD, the first record of this species being observed in Pueblo County. For reptiles, Prairie rattlesnakes and gopher snakes are quite common on PCD, as are coachwhips. The massasauga, a smaller species of rattlesnake that is a species of concern in Colorado, has been found immediately adjacent to the depot off its northeastern boundary. Prairie and lesser earless lizards are readily seen, and the Colorado checkered whiptail, another species of concern, can be found on the depot. Ornate box turtles can be found on the western prairie of the installation, and painted turtles have been observed in association with wetland and aquatic systems. A comprehensive inventory, (i.e., Army Planning Level Surveys), of amphibians and reptiles is planned for summer 2021.

Other Mammal Species

A comprehensive inventory, (i.e., Army Planning Level Surveys), of mammals was last conducted on PCD in 2000. Most species records are opportunistic sightings reported by USFWS biologists during execution of other field projects. A comprehensive inventory, (i.e., Army Planning Level Surveys), of mammals is planned for summer 2021.

Recurring Actions for Wildlife Management at PCD

(Please note: The following proposed actions are in priority order from 1 to 10. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.) Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. Continue annual surveys at the AWS pond for the Southern Redbelly Dace.
2. Participate in academic partnerships and regional and national working groups to increase technical knowledge and expertise needed to develop alternative management options facilitating both military mission and conservation.
3. Continue monitoring native fish populations on PCD, if funded.
4. Conduct amphibian and reptile planning level surveys, if funded.
5. Conduct mammal planning level surveys, if funded.
6. Continue developing and maintaining water resources for mitigating movements of big game species.
7. Identify, burn, and monitor areas to improve forage for big game species. Due to the importance to pronghorn in winter, cholla grasslands will be excluded or burned in a mosaic pattern to preserve integrity of the resource.
8. Integrate installation management practices, e.g., prescribed fire, revegetation, pest management, storm water management, and invasive species management to enhance and protect biological diversity.
9. Continue cooperative surveys and management of PCD big game populations with CPW, if funded.
10. Continue to review projects and installation activities to identify and mitigate effects on biological communities.

4.e. Migratory Birds Management

The goal for this program is to manage migratory birds in accordance with (1) Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds), (2) the MOU Between the U.S. Department of Defense and the U.S. Fish and Wildlife Service to promote the Conservation of Migratory Birds, (3) DoD guidance to implement the MOU to promote conservation of migratory birds, (4) Interim Guidance-Unintentional Take of Migratory Birds for Actions Other than Military Readiness Activities (U.S. Department of the Army IMAE-CO Memorandum, 2008), and the (5) Migratory Bird Treaty Act (MBTA).

Protection of migratory birds is mandated by the MBTA, a criminal statute prohibiting the taking, killing, or possessing of migratory birds unless permitted by regulation. Historically, the MBTA protects birds from intentional and incidental (unintentional) take and imposes civil penalties for violations by individuals and organizations. DoD is committed to strive to protect, restore, enhance and manage the habitat of migratory birds and to develop and implement procedures and conservation measures that will avoid the take of such birds. However, if the taking of a bird is incidental to a military readiness activity, the matter is addressed in 50 CFR 21.15 and discussion at Volume 72 of the Federal Register, pages 8931 through 8950. In 2007, Congress authorized incidental take of migratory birds without a take permit for any Military Readiness Activity (MRA) conducted by members of the Armed Forces.

In December 2017, the Office of the Solicitor of the United States Department of the Interior issued Solicitor's Opinion M-37050, The Migratory Bird Treaty Act Does Not Prohibit Incidental Take, which states that the MBTA prohibition on "take" only applies to deliberate acts intended to take a migratory bird, their nests, or their eggs. A follow-up memorandum from the Deputy Assistant Secretary of Defense (Environment, Safety and Occupational Health), titled Incidental Take of Migratory Birds (6 February 2018), clarified that this opinion does not rescind Executive Order 13186 or the MOU with the USFWS. This memorandum advised that the military should continue to follow existing DoD guidance to minimize the incidental take of migratory birds. Furthermore, the MBTA M opinion was officially withdrawn by Department of the Interior on March 8, 2021.

The policy regarding an incidental take for non-readiness activities is controlled by the 2008 Interim Guidance. Until further clarification or guidance from the DoD, PCD will continue to implement this guidance and to the greatest extent practical delay activities and avoid or minimize adverse impacts on migratory birds. This policy includes guidance concerning actions that cannot be delayed until after the nesting season or modified to minimize impacts on migratory birds because of the activity's direct and essential support of MRA or vital military support activities, or when necessary due to concern for public health or for untenable damage to structures. As such guidance is further extended or superseded, PCD will work with USFWS and CPW to ensure implementation is well coordinated.

The USFWS enforces the MBTA and manages a permit program for the 'taking' of migratory birds. Such a permit is required for intentional take of protected species, or for actions that have the potential to result in take, such as the relocation of the nest of a protected bird from a nuisance location. On PCD, all migratory birds are protected by the MBTA, including hunted and non-game species, USFWS Birds of Conservation Concern, and federally listed species, if any. The PCD EMO reviews project proposals for potential conflicts with the MBTA, identifies species present in the action area, and identifies permits, documents, collaboration, and recommendations for an action to proceed and remain in compliance with the MBTA. The EMO will prepare migratory bird environmental documents and the elements required by DoD guidance. In addition, prior to construction projects, clearing surveys are conducted; for example, Burrowing Owl surveys are conducted year-round for three days in accordance with CPW protocol. Significant natural resource management actions, (e.g., prescribed fire), will continue to be conducted during the non-breeding season for migratory birds. PCD will adhere to USFWS management guidelines (Klute et. al. 2003) for the Burrowing Owl and other federally sensitive species of migratory birds when and where feasible.

Recurring Actions for Managing Migratory Birds at PCD

(Please note: The following proposed actions are in priority order from 1 to 8. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.) Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. Continue annual Burrowing Owl monitoring.
2. Continue annual grassland bird monitoring.
3. Continue to review projects and installation activities to identify and mitigate conflicts with the MBTA and BGEPA.
4. Conduct compliance-monitoring surveys at project sites and coordinate required mitigation with action proponents and/or law enforcement.
5. Continue DoD Partners In Flight membership and support.
6. Map grasslands important to nesting birds with declining populations for input into the development of annual prescribed fire plans.
7. Continue migratory bird outreach and education programs.
8. Conduct burrowing owl translocations to supplement the PCD population, if funded.

4.f. Invasive Species Management

Definitions

Invasive species are generally defined as alien (non-native) organisms that are directly or indirectly detrimental to economic crops or native plant communities and injurious to people, livestock or wildlife and the resources they utilize. Invasive species found on PCD are most commonly noxious weeds that threaten wetland ecosystems, complicate land restoration projects, add to the cost of pest management, and in general, threaten ecosystem functionality. Noxious weeds are designated as such by state or federal law. The terms noxious and invasive are often used interchangeably.

Regulatory Programs

PCD is dedicated to the prevention of introduction of invasive species as well as their control, per Executive Order 13112, *Invasive Species*. The Federal Noxious Weed Act (Section 2814 of 7 USC 360), part of the Plant Protection Act of 2000, mandates federal agencies to (i) have an office or person trained to coordinate an undesirable plant management program, (ii) adequately fund the program, (iii) implement cooperative agreements with state agencies, and (iv) conduct integrated pest management techniques for managing undesirable plant species.

Executive Order 13112 (1999) directs agencies to (i) prevent the introduction of invasive species, (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner, (iii) monitor invasive species populations accurately and reliably, (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded, (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species, and (vi) promote public education on invasive species and the means to address them. It also prohibits federal agencies from authorizing, funding, or carrying out actions that are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless the benefits of such actions clearly outweigh the potential harm caused by invasive species.

State of Colorado House Bill 90-1175, Section 1, Title 35, Article 5.5 (*Undesirable Plant Management*) mandates the control of invasive species an all public and private lands and empowers counties and municipalities to enter into cooperative agreements with federal agencies. The Colorado Department of Agriculture, via the 2004 revised Colorado Noxious Weed Act, (i) created List A, B and C type weeds; (ii) mandated the eradication of 18 species of weeds (List A); and (iii) mandated the statewide, phased eradication of five List B species with additional List B species elevated to eradication status each year. State of Colorado Tile 8 Code of Colorado Regulations (CCR) 1206-2, Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act, updates the list of regulated noxious weed species annually and states that it is a violation to allow any List A species and List B species designated for elimination to produce seed or reproduce.

Other relevant legislation includes the Carlson-Foley Act of 1968, Endangered Species Act, Federal Insecticide, Fungicide and Rodenticide Act, Federal Land Policy and Management Act, National Environmental Policy Act, and the Noxious Weed Control and Eradication Act of 2004.

DoDI 4150.07, and AR 200-1 also contain guidance on invasive species management.

Current Conditions

There are currently 80 state-listed weed species designated for containment, control or eradication. Noxious weed surveys were conducted by the Colorado Natural Heritage Program (CNHP) on PCD in 2000 and 2001. In 2006, a noxious weed control program was initiated on PCD, beginning with the treatment and control of tamarisk. Noxious plant surveys found PCD to be relatively clear of invasive species, although some areas were locally impacted. Especially pervasive are tamarisk (saltcedar),

Russian thistle, sweetclover, and kochia, although other species of concern are Canada thistle and chicory. Emphasis was placed on surveying wetlands and drainages, roadsides, and disturbed areas. Some of the open prairies were not intensively surveyed because previous inventories conducted by the CNHP found no weeds in those areas.

The results of those surveys and the Post-grazing Habitat Monitoring study CNHP conducted formed the basis for a review of noxious weeds on the depot in the Front Range Ecoregional Partnership Invasive Plant Species Strategic Plan (Spackman Panjabi and Decker 2007). The plan is an assessment of noxious weeds on military installations along the Front Range and identifies weed control priorities for each installation.

PCD plans to conduct noxious weed surveys and mapping from 2021-2025, if funded.

Noxious Weed Species Priorities

Outlined below are priorities for weed control on PCD. Species addressed include only those that are known to occur on the installation.

- Weeds designated by the State of Colorado as "A" list species will be highest on the management priority list, followed by "B" list species and then "C" list species.
- Weed populations designated by the State of Colorado for eradication will also be high on the priority list, followed by those designated for elimination.
- Small, newly identified populations of any noxious weed on the state list or a nonnative species found exhibiting invasive characteristics will receive immediate management priority for control over all other weed species.
- Weed sites closest to installation boundaries and on main routes will be of higher control priority than interior sites.
- Weed sites that are rapidly expanding (based on monitoring information) will be controlled at a higher priority than more stable sites.
- Weeds growing in ecologically sensitive habitats (e.g., wetlands, rare species habitats) will be given a high management priority.
- Weeds growing within and adjacent to cultural resource sites will be given a high management priority; treatment will be coordinated with the EMO.

A comprehensive noxious weed inventory has not been conducted on PCD since 2001.

Noxious Weed Management Plan

The prevention of noxious weeds from populating disturbed areas is PCD's first line of defense. The control of noxious weeds on PCD is of critical importance from both a natural resources management and military readiness perspective. Implementing a comprehensive, long-term weed management program would help promote and sustain the military mission and protect the natural environment. Primary elements of this program would be:

- Maintaining soil, water, and vegetation resources that provide ecological stability;
- Minimizing the impact of construction and military training activities on the spread and establishment of noxious weed species within and outside PCD boundaries;
- Actively participating on County and regional weed boards; and
- Fostering a "good neighbor" relationship with adjacent land owners.

Recurring actions for invasive species program on PCD.

(Please note: The following proposed actions are in priority order from 1 to 2. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.)

1. Conduct surveys for noxious weeds, if funded.
2. Develop and implement a Noxious Weed Management Plan and update the plan on a 5-year cycle.

4.g. Pest Management

AR 200-1 and DoDI 4150.07 require all installations to have a well-planned and implemented pest management program. Inadequately planned pest management operations can result in pesticide exposures that threaten human health and natural resources while polluting the environment. The main goal of the pest management program is to maintain and safeguard the health, environmental quality, aesthetic values, and ecological balance of the military community by protecting real estate investments from depreciation by pests, while complying with environmental protection and improvement policies.

PCD recognizes six general categories of pests that cause significant damage and require control or management (PCD 2019):

- Public health pests (e.g., mosquitoes, black widow spiders, fleas, wasps, certain rodents);
- Noxious/Invasive plants and animals (e.g., Colorado-listed noxious weed species);
- Undesirable vegetation (e.g., weeds in ornamental rock areas and turf grass, weeds along fence lines, weeds interfering with range operations, weeds/algae affecting reservoirs and ponds, and weeds on road shoulders and paved surfaces);
- Structural pests (structural/wood-destroying pests such as carpenter ants and termites);
- Pests found in and around buildings (e.g., cockroaches, flies, beetles, crickets, spiders, and ants);
- Vertebrate pests (e.g., birds, snakes, rodents, prairie dogs, raccoons, skunks, bats, and road-killed animals).

Pest management activities on PCD are under the supervision of the EMO, with all actions subject to the approval of the Installation Pest Management Coordinator (IPMC).

Integrated Pest Management Plan (IPMP)

The PCD Integrated Pest Management Plan (2019) identifies and prioritizes pests and their destructive effects to determine particular levels of protection. Objectives of the IPMP are to:

- Identify integrated pest management planning requirements listed in AR 200-1;
- Describe program elements for health and environmental safety, pest identification, pest management and pesticide storage, transportation, use and disposal;
- Reduce reliance on pesticides, where possible;
- Enhance environmental protection; and,
- Maximize the use of integrated pest management techniques.

The PCD pest management program is consistent with the Presidential Memorandum, Environmental Practices on Federal Grounds (Office of the President 1994) to reduce pesticide use by using integrated pest management (IPM). Typically, a combination of IPM techniques is required to resolve a problem on a sustained basis. IPM includes the implementation and coordination of optimum sanitation, good structural design and maintenance of facilities, and the use of mechanical, cultural, biological, and if necessary, chemical control. The IPM comprehensive approach to pest management or prevention, using methods of pest management in a compatible manner, avoids damage and minimizes adverse side effects to non-target organisms and the environment.

Pest surveys are used to determine the type of pest, extent of the problem, and pest management technique most appropriate for safe, effective, and economic control. Chemical control is used only when non-chemical techniques are inadequate or impractical. Furthermore, chemical control is not used as a substitute for good sanitation practices or proper building maintenance. The IPMP discusses many aspects of pest management that are not directly within the scope of this INRMP, such as control of common disease vectors (fleas, cockroaches, etc.), protection of facilities, and storage of pesticides. The following discussions of animal and plant control primarily involve the management of natural resources on PCD.

Species of Conservation Concern

Sensitive areas listed on pesticide labels are considered before pest management operations are conducted. No pesticides are applied directly to wetlands or water areas unless use in such sites is specifically approved on the label and the proposed application is approved by the IPMC. The IPMC periodically evaluates ongoing pest management as well as new pest management operations to ensure compliance with the ESA, CWA, BGEPA, and the MBTA. Pest management operations that are likely to have a negative impact on endangered or protected species or their habitat require prior approval from the IPMC. Pest management operations will also be required to prepare management prescriptions for pest management operations when the USFWS issues new species listings.

PCD conservation goals include protection of the burrowing owl and black-tailed prairie dog. Prairie dog colonies on PCD can and have been decimated by plague outbreaks. PCD active prairie dog colonies are treated annually with deltamethrin dust to control flea populations (causative agent) within colonies. Effective management of plague is critical at these colonies given prairie dogs serve as keystone species in the shortgrass prairies.

Recurring Actions for IPM on PCD

(Please note: The following proposed actions are in priority order from 1 to 8. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.) Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. Control those plant and animal species that affect human health, quality of life, natural resources management (e.g., reduce ecosystem functionality, displace native species) or the military mission, exclusive of noxious weeds.
2. Maintain and implement the IPMP on a 5-year cycle, including an update in 2024.
3. Ensure pesticide applicators are fully certified.
4. Conduct preventive maintenance and surveillance inspections for pests.
5. Ensure pest management personnel receive adequate formal, as well as on-the-job, training to achieve required pest management certification and to operate at the most efficient level.
6. Procure, maintain and properly store adequate supplies of pesticides and pesticide dispersal equipment.
7. Implement a safety program that provides for the safety and well-being of all pest management personnel.
   Coordinate with the EMO for the protection of wildlife (particularly listed or sensitive species) during pesticide operations.

4.h. Land Management

Information related to land management on PCD can be found in the following sections:

- 4.b. Wetlands management
- 4.f. Invasive species management
- 4.l. Wildland fire management

4.i. Agricultural / Grazing Outleasing

In the past, Prior to 1942 when the land for PCD was acquired, the current installation was comprised of ranches. The historic ranching activities had a major effect in controlling vegetation spread and density along with keeping the prairie free of woody invasion. Grazing by native mammals and cattle along with natural fire ignited by lightning kept prairies healthy. Since 1942, grazing was stopped and fires have not been able to reduce the fire load. The current vegetation structure now reflects a mix of woody species, which differ from those historically associated with the region. The lack of grazing and wildfires on PCD in recent decades has allowed woody plant encroachment into prairies making access and maneuvering more difficult and impacting proper land stewardship. To restore and maintain the PCD grassland ecosystems in locations where woody encroachment is clearly occurring, the invading woody vegetation will be killed with prescribed burns and cattle grazing.

In the past, livestock (cattle) grazing on PCD has been considered, but never established. Grazing was evaluated in 2020 for the following: Compatibility with the military mission, Capacity of the natural resources to support grazing without degrading the resources, Assess the costs versus benefits of having such a program. It was determined that livestock grazing (primarily in the northeast portion of PCD) would be compatible with current mission requirements, and there would be a positive cost benefit to PCD and surrounding landowners.

Recurring Actions for Grazing Outleasing on PCD

(Please note: The following proposed actions are in priority order from 1 to 8. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.) Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. Obtain headquarters approval of a grazing program.
2. Implement a grazing lease program on approximately 3,000 acres in the northeast corner of the installation.
3. Maintain grassland ecosystems where woody encroachment is occurring through acceptable, prescribed and rotational livestock grazing.
4. Coordinate with the Natural Resource Conservation Service for conducting annual forage inventory to provide information necessary for determining stocking rates.
5. Conduct annual inventories of the lease area in the spring to determine the allowable stocking rate for the next year to keep livestock grazing in balance with the available forage.
6. Implement livestock grazing deferments on a rotational basis to allow re-vegetation of deep-rooted plant species, improve long-term sustainability of short-grass prairies, and reduce the risk of wildland fire.
7. Ensure that all grazing activities are conducted in a manner consistent with the INRMP in providing for multiple uses including military mission, wildlife and habitat restoration, and natural and cultural resources management.
8. Monitor leasee performance per the requirements in the grazing agreement.
9. Develop a grazing management plan, if funded.

4.j. Geographic Information Systems (GIS) Management

The goals of the PCD GIS program are to provide customer support to staff and contractors by providing data, analysis for the enhancement of decision-making purposes, and hard copy documentation/representation to sustain PCD environmental missions. The EMO maintains a common server to share GIS files. Sensitive data (e.g., cultural and natural resource sites) are not commonly shared, but are maintained by the individual program. Currently, EMO does not have a staff member dedicated to GIS within natural resources. Efforts should continue to more effectively organize the storage of this data,

share it with other installation directorates that could benefit from the data, ensure that data is consistent among all personnel relying on it, and to eliminate duplication of data.

Recurring Actions for GIS Management on PCD.

(Please note: The following proposed actions are in priority order from 1 to 3. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.) Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. Provide maps and spatial analyses to support natural resources management as well as other missions.
2. Work cooperatively with all GIS users to share GIS data and products.
3. Maintain up-to-date software and data.

4.k. Outdoor Recreation

The principal use of DoD lands and waters is to support mission-related activities; all other land uses are subordinate. Currently, there is no outdoor recreation allowed on PCD given the military mission. A future recreation program on PCD, if established, could allow for fishing and hunting opportunities. The purpose of the recreation program on PCD would be to manage the population levels of wildlife within the current carrying capacity of specific wildlife habitats on PCD, maintain and enhance a sustainable ecosystem, and provide recreational opportunities for the enjoyment of the public.

PCD lands and waters are available for non-military purposes in accordance with 10 USC 2671, *Military Reservations and Facilities: Hunting, Fishing, and Trapping* (amended 2011), AR 200-1 (Environmental Protection and Enhancement), the installation INRMP, Sikes Act, and Army directives and policies when compatible with the military mission, installation safety and security, ecosystem sustainability, natural resources management, and fiscal responsibility. The PCD Commander can limit public access for reasons of safety, security, ecosystem needs, sustainment, or interference with military mission.

4.l. Wildland Fire Management

Wildland Fires

Lightning strikes and human-caused fires are also potential ignition sources. The elevated frequency and shortened regenerative growth cycle created by these wildland fires has a potential to cause damage to natural resources. The fire management program on PCD is focused on containing and responding quickly to these wildland fires and using prescribed fires to reduce the chances of catastrophic wildland fires while managing natural resources. The PCD Fire Department (PCDFD) is the primary proponent of the wildland fire program. The PCDFD and EMO are the primary proponents of prescribed burns for ecosystem purposes. Personnel from EMO actively assist the PCDFD with prescribed fire planning, permitting, and management. Natural resource personnel also plan, select, and survey burn areas to accomplish objectives related to this INRMP (e.g., invasive weed control, ecosystem management, and restoration). Army policy is being revised at this time, which may result in changes to responsibilities, operations, etc. regarding fire management.

Prescribed Fire

Prescribed fire is defined as the "controlled application of fire to wildland fuels in either their natural or modified state, under specific environmental conditions which allows the fire to be confined to a predetermined area, and produce the fire behavior and fire characteristics required to attain planned fire treatment and resource management objectives (National Wildfire Coordinating Group)." Prescribed fire strategies differ from wildland fire suppression strategies in that the primary goal is to use fire to achieve predetermined fuels management objectives within a given set of fire behavior constraints. Prescribed fires

occur within a defined area having identified control boundaries, have a written prescribed fire plan, and have a permit from the Colorado Department of Public Health and Environment (CDPHE) Air Quality Control Division.

Prescribed fire is often used to mimic the fire regime that occurred within its historical range of variability on our local ecosystems. This natural fire regime provides for the reduction of wildfire fuel loading on PCD. The reduction of wildfire fuels provides protection to the high value natural resources on PCD by reducing the risk of a catastrophic landscape-scale wildland fire.

Prescribed Fire Plan

The PCDFD, in coordination with EMO, develops a prescribed burning plan for PCD. The plan includes proposed burn areas to accomplish multiple fuel management objectives, including natural resources management. This plan is assessed through the NEPA process to identify potential issues, including impacts to natural and cultural resources.

Fire Management Coordination

PCD personnel coordinate and consult with federal, state, and local agencies, universities, or local landowners on concerns regarding wildland fire management or the use of prescribed fire. Applicable permits, such as an air quality burning permit from CDPHE and/or Section 404 permit from the USACE, are acquired prior to any fire management activity.

Recurring Actions for the Wildland Fire Program at PCD

(Please note: The following proposed actions are in priority order from 1 to 7. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.) Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. Request annual funding to replace personal protective equipment, to maintain/replace equipment, and for annual training.
2. Assist fire department personnel in suppressing wildfires resulting from mission or other sources.
3. Annually assist PCDFD and Emergency Services in preparing and implementing the Prescribed Fire Burn Plan.
4. Ensure Prescribed Fire Burn Plan and Burn Permits are in compliance with the INRMP, Land Use Plans, Army Wildland Policy Guidance, and CDPHE requirements.
5. Ensure wildlife and endangered species habitat enhancement and protection are considered during fire management activities.
6. Coordinate with cultural resource and natural resource personnel during wildfires and prior to conducting prescribed burns.
7. Describe fire use benefits in education and outreach programs such as the Earth Day Events on PCD.

4.m. Training of Personnel

The natural resource programs on PCD are dedicated to recruiting and retaining highly qualified professionals. Personnel are encouraged to continue their professional development by participating in regional and national conferences and training opportunities.

Recurring Actions for Training of Personnel at PCD

(Please note: The following proposed actions are in priority order from 1 to 3. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.) Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. For government employees, include in Individual Development Plans refresher training needed to fulfill job requirements (e.g., enforcement, GIS, NEPA, endangered species documentation/consultation, firefighter, pesticide application) and ensure that they get the training.
2. Provide funding for personnel to attend annual workshops or professional conferences.
3. Encourage personnel to join and be active in professional societies and cooperative groups.

4.n. Surface Water

Lynda Ann Reservoir is a man-made feature, dredged out and dammed in the Boone Creek drainage system in 1953 to provide a training and testing site for amphibious vehicles. It is fed primarily by groundwater from the ephemeral Boone Creek and by runoff from the surrounding area. During the summer months, the reservoir's water is often high in suspended particulate matter, making it appear green and turbid. During drought years, the reservoir dries up. Most of the other ponds and wetlands overlying the terrace alluvial aquifer on PCD are contact springs, where the shallow groundwater erupts from bluffs or otherwise incised features. Significant among these are the spring pond along the upper Boone Creek drainage, the Ammunition Workshop Site (AWS) Pond that terminates a drainage from a seep in the southwestern portion of the depot, and unique seeps, called pocket fens, along the bluffs in northwestern and southeastern PCD.

Chico Creek flows down the west side of PCD. During periods of average annual precipitation, the creek is perennial as it flows through the north and central portions of the depot. In the southern one-third, flowing water is evident only after local or upstream precipitation events. This periodicity is especially evident during the summer season; water is typically more abundant during the winter months. Water abundance in the stream system is undoubtedly influenced by a number of factors, some of which might be general climatological patterns and events, characteristics of the underlying soils, historical uses such as cattle grazing, and invasive nonnative species such as tamarisk. Upstream management practices can have a strong influence in the quality and quantity of water in lower Chico Creek.

The two other primary drainage systems on the depot are Boone Creek and Haynes Creek. Boone Creek begins approximately 1.5 miles south of the depot's northern border, runs almost due south to Lynda Ann Reservoir, and continues south to PCD's boundary. Haynes Creek, which enters the depot along the northern boundary, crosses the northeastern corner of the depot, and exits the east side. A much smaller drainage system that originates near SWMU 14 exits at the same point. This system is generally referred to as "the unnamed creek." All three drainage systems are ephemeral or intermittent and flow south to the Arkansas River.

Recurring Actions for Surface Waters at PCD

(Please note: The following proposed actions are in priority order from 1 to 2. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.) Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. Monitor the water quality on surface waters on PCD, if funded.
2. Complete noxious weed management at surface water locations, if funded.

4.o. Water Rights

PCD's water rights are junior, and so it is required to have an augmentation plan that is designed to protect existing water rights. PCD augments its water use through a contract with the Pueblo Board of Water Works. Under the terms of the agreement, PCD pays for a minimum of 210 acre-feet per year, while using between 170 and 210 acre-feet per year from the 11 supply wells and 2 acre-feet per year for the ICAGRS. Under this contract, the depot can purchase up to 300 acre-feet per year.

PCD's right to detain the water in Lynda Ann Reservoir has been questioned by the State Division of Water Rights (DWR). The DWR has found no records of PCD acquiring the rights to that water. DWR has stated that PCD was required to either breach the dam and drain Lynda Ann Reservoir, allowing downstream users access to that water, despite the fact that the reservoir is on an ephemeral drainage system and would become dry once the ponded water were release, or pay a 1-time augmentation fee for the water in the reservoir if filled to capacity, and an annual augmentation fee thereafter. The 17-acre reservoir averages an estimated five feet deep, containing about 85 acre-feet of water. After a review of options with regard to water rights, Lynda Ann Reservoir, and the recent decrease in the size of the reservoir, the DWR determined that the water in the reservoir is insufficient to supply downstream users with water if the dam was removed. Therefore, at this time, PCD is not required to remove the dam.

Recurring Actions for Water Rights at PCD

(Please note: The following proposed actions are in priority order from 1 to n. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.) Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. Continue to work with Pueblo Board of Water Works and DWR to address water right issues on PCD.

4.p. Cultural Resources

Information about management of cultural resources on PCD can be found in the Integrated Cultural Resources Management Plan (ICRMP), which is available on the PCD website.

The Natural Resources Management program takes into account cultural resources considerations by means of NEPA review of proposed projects or actions, prior to start of the project or action. NEPA review of proposed natural resource projects includes coordination with the Cultural Resources Manager (CRM) prior to implementation of a proposed project.

4.q. Bald and Golden Eagle Management

The Bald and Golden Eagle Protection Act (BGEPA), which prohibits the taking of Bald or Golden Eagles, regulates protection of eagles. The statutory definition of take includes disturbance as a form of take. In the Code of Federal Regulations, “disturb means to agitate or bother a Bald or Golden Eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.” Additionally, Bald and Golden eagles are protected by the MBTA, by DoD policy expressed in the MOU with USFWS to promote the conservation of migratory birds, and by permit requirements at 50 CFR parts 13 and 22.

The golden eagle is a year-round resident of PCD, and is most abundant in winter. The bald eagle is present on PCD in migration and winter, late October through March. Neither species have been observed to nest on PCD, and has never been recorded during the breeding season at PCD. Both species depend on the prairie dog, a significant prey resource. On PCD, the most important eagle hunting areas are on colonies on the east side of the installation. However, both golden and bald eagles are observed throughout the installation.

Recurring Actions for Managing Eagles at PCD

(Please note: The following proposed actions are in priority order from 1 to 2. They will be implemented beginning with 1 as funding and manpower become available. However, priorities can change for various reasons such as changes in military mission, and events such as storms and fires.) Appendix 4 of this INRMP has a column in the tables showing which projects are requirements and which are BMPs.

1. Continue to review project proposals for potential conflicts with the BGEPA and identify permits, documents, collaboration, and recommend mitigation to avoid violations. Consultation with USFWS law enforcement and permit office may be required to ensure actions are adequately mitigated.
2. Continue to conduct compliance-monitoring surveys at project sites and coordinate required mitigation with action proponents and/or law enforcement.

5. IMPLEMENTATION

5.a. Process of Preparing Management Prescriptions

In addition to the recurring actions listed in Chapter 4, annual work plans are created by EMO within the framework of the prescriptions, to accomplish specific objectives (Appendix 4). These projects are then reviewed by appropriate EMO staff, to include NEPA review, and eventually approved by the EMO Chief. Once approved, projects are accomplished as funding permits. The USFWS and the CPW will have opportunities to review the project list approved by the EMO Chief.

5.b. Funding Process

The Office of the Secretary of Defense considers funding for preparing and implementing this INRMP, as required by the Sikes Act and the associated NEPA documentation, to be a high priority. However, the economic reality is that not all the projects and programs identified in the plan will receive immediate funding. Therefore, the programs and projects identified in this INRMP and presented in Appendix 4 have been placed into three priority-based categories: high priority, medium priority, and low priority. The prioritization of the projects is based on need, and need is based on the importance of a project in moving the natural resources management program toward successfully achieving its goals. The funding required to implement most of this INRMP is derived from EMO base operational funds, with some support coming from BRAC funds for projects related to base closure. Several projects have a cost of $0 because they are considered duties of the PCD natural resources manager that are covered by salary and have minimal to no cost.

The projects identified in this INRMP are classified into two categories: recurring and nonrecurring requirements. Nonrecurring requirements are further classified as current compliance, maintenance requirements, and enhancement actions beyond compliance. Must-fund requirements are projects and activities in the recurring and current compliance categories.

Detailed explanations of the funding categories are in Enclosure 4 to DoD Instruction 4715.03, Natural Resources Conservation Program, March 18, 2011. The categories are summarized in the following descriptions:

1. *Recurring Natural Resources Conservation Management Requirements*: Administrative, personnel, and other costs associated with managing the DoD Natural Resources Conservation Program that are necessary to meet applicable compliance requirements in federal and state laws, regulations, EOs, and DoD policies, or in direct support of the military mission, with priority given to recurring natural resources conservation management requirements associated with the operation of facilities, installations, and deployed weapons systems.
2. *Nonrecurring Natural Resources Conservation Management Requirements*: Current Compliance: Includes installation projects and activities to support (1) installations out of compliance (e.g., that have received enforcement actions from authorized federal or state agencies or local authorities), (2) signed compliance an agreement or consent order, (3) meeting requirements with applicable federal or state laws, regulations, standards, EOs, or DoD policies, (4) immediate and essential maintenance of operational integrity or military mission sustainment, and (5) projects or activities that will be out of compliance if not implemented in the program year.
3. *Maintenance Requirements:* Includes projects and activities needed to meet an established deadline beyond the program year and maintain compliance. Examples include (1) compliance with future deadlines, (2) conservation, GIS mapping, and data management to comply with federal, state, and local regulations, EOs, and DoD policy, (3) efforts undertaken in accordance with nondeadline-specific compliance requirements of leadership initiatives, (4) wetlands enhancement to minimize wetlands loss and enhance existing degraded wetlands, and (5) conservation recommendations in biological opinions issued pursuant to the ESA.

4. *Enhancement Actions beyond Compliance*: Includes projects and activities that enhance conservation resources or the integrity of the installation mission, or are needed to address overall environmental goals and objectives but are not specifically required by law, regulation, or EO, and are not of an immediate nature. Examples include (1) community outreach activities, (2) educational or public awareness projects, (3) restoration or enhancement of natural resources when no specific compliance requirement dictates a course or timing of action, and (4) management and execution of volunteer and partnership programs.

Must-fund projects and actions include those required to (1) meet USFWS special management criteria for threatened and endangered species management, (2) provide for qualified natural resources personnel, and (3) prevent resource loss or degradation (e.g., soil loss or other maintenance activities) that could affect military readiness.

Not all projects listed in an INRMP are must funds. INRMPs include valid maintenance requirements and enhancement actions beyond compliance.

5.c. Staffing

The Natural Resources Management staff at PCD falls under the EMO and consists of one employee, the Natural Resources Manager (NRM), a USFWS employee stationed at PCD under the provisions of a Tripartite Cooperative Agreement (2020) between USFWS, CPW, and PCD. The NRM oversees the programs and projects identified in this INRMP and their implementation.

The PCD Natural Resources Management Program, as presented in this INRMP, can be implemented by the NRM with the assistance of other PCD entities (e.g., EMO, SLED, and DPW), the agencies and organizations mentioned in section 7.1.2, and the public to ensure that the many different facets of the resource management program are addressed. Implementing some projects discussed in the INRMP will require active outside assistance, which might come from state and federal agencies, universities, or contractors. The use of those resources is the most efficient and cost-effective method for temporarily acquiring expertise. Some parties will be reimbursed for their assistance according to the terms in MOUs and contractual agreements, whereas others will supply their assistance according to cooperative agreements and volunteer efforts.

5.d. Annual Coordination Requirements

Section 101(a)(2) of the Sikes Act states that the INRMP must reflect the *mutual agreement* of USFWS and the state "concerning conservation, protection, and management of fish and wildlife resources." In response, the DoD issued the following guidance (DUSD memorandum, October 10, 2002):

"Each DOD installation shall establish and maintain regular communications with the appropriate USFWS and State fish and wildlife agency offices to address issues concerning natural resources management that are not addressed in the INRMP. At a minimum, this shall include annual coordination with all cooperating offices."

The purpose of this coordination is to facilitate annual review by USFWS and CPW. In accordance with DoD guidance, these annual reviews must verify that:

1. Current information on all conservation metrics is available.
2. All must-fund projects and activities have been budgeted for and implementation is on schedule.
3. All required trained natural resources positions are filled or are in the process of being filled.
4. Projects and activities for the upcoming year have been identified and included in the INRMP. (An updated project list does not necessitate revising the INRMP.)
5. All required coordination has occurred.
6. All significant changes to the installation's mission requirements or its natural resources have been identified.

5.e. Monitoring INRMP Implementation

According to DoD guidance, implementation anticipates the execution of all must-fund projects and activities in accordance with specific timeframes identified in the INRMP.

An INRMP is considered to be implemented if an installation:

1. Actively requests, receives, and uses funds for must-fund projects and activities.
2. Ensures that sufficient numbers of professionally trained natural resources management personnel are available to perform the tasks required by the INRMP.
3. Coordinates annually with all cooperating offices.
4. Documents specific INRMP actions accomplished each year.

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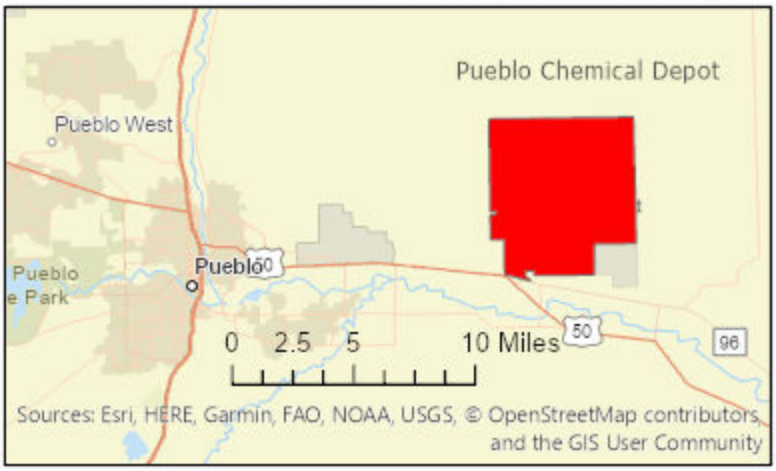
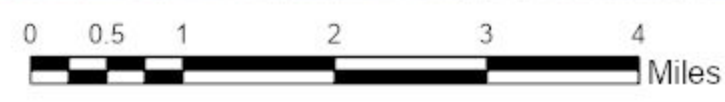
Figure 1: PCD Location Map





Legend

Depot Boundary

PCD Boundary

Figure 2: PCD Boundary Map

Figure 3: Topographic Map

Figure 4: PCD Cantonment Area Map

Figure 5: Wildlife Management Areas

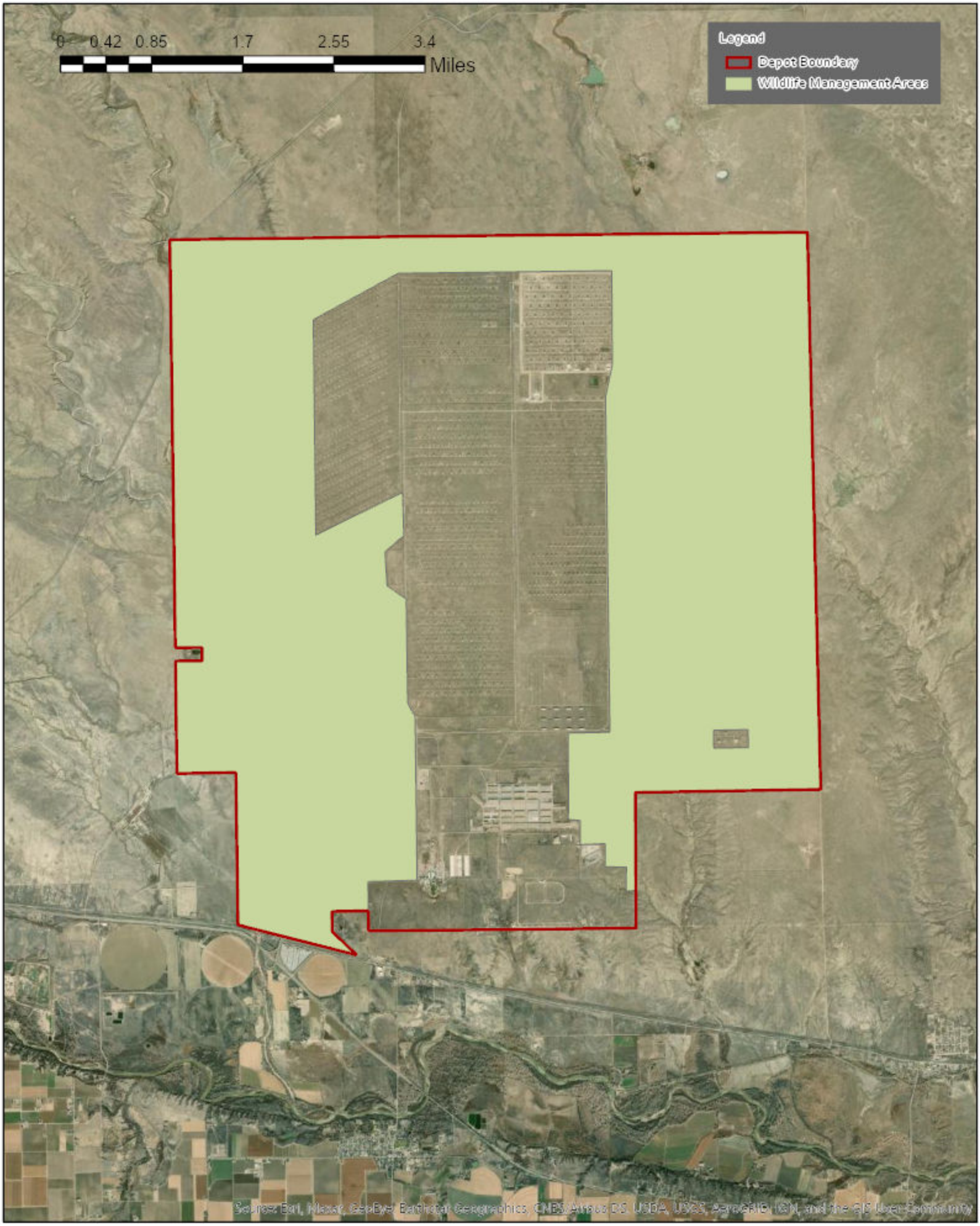


Figure 6: PCD Road System

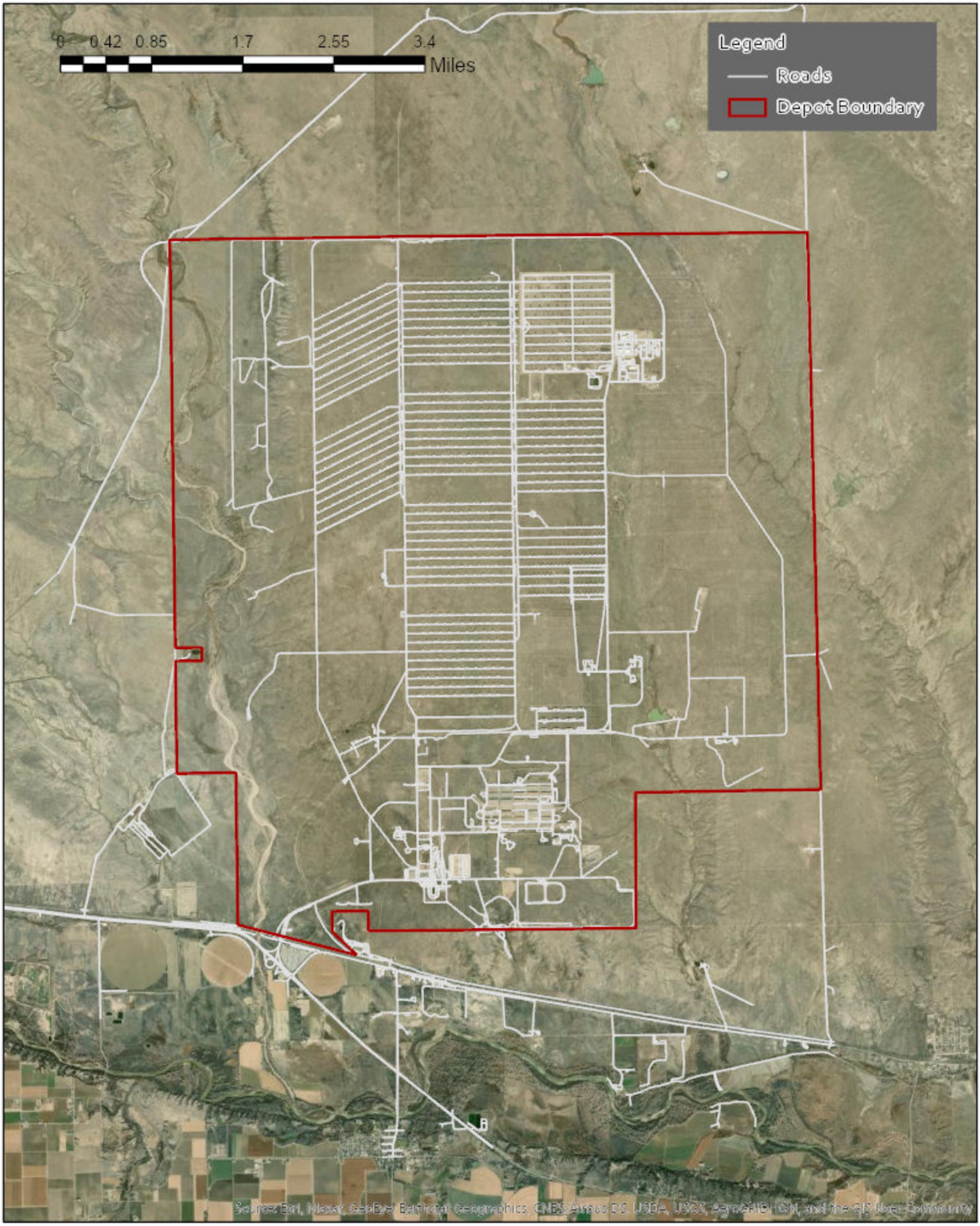


Figure 7: PuebloPlex Transfer Parcels

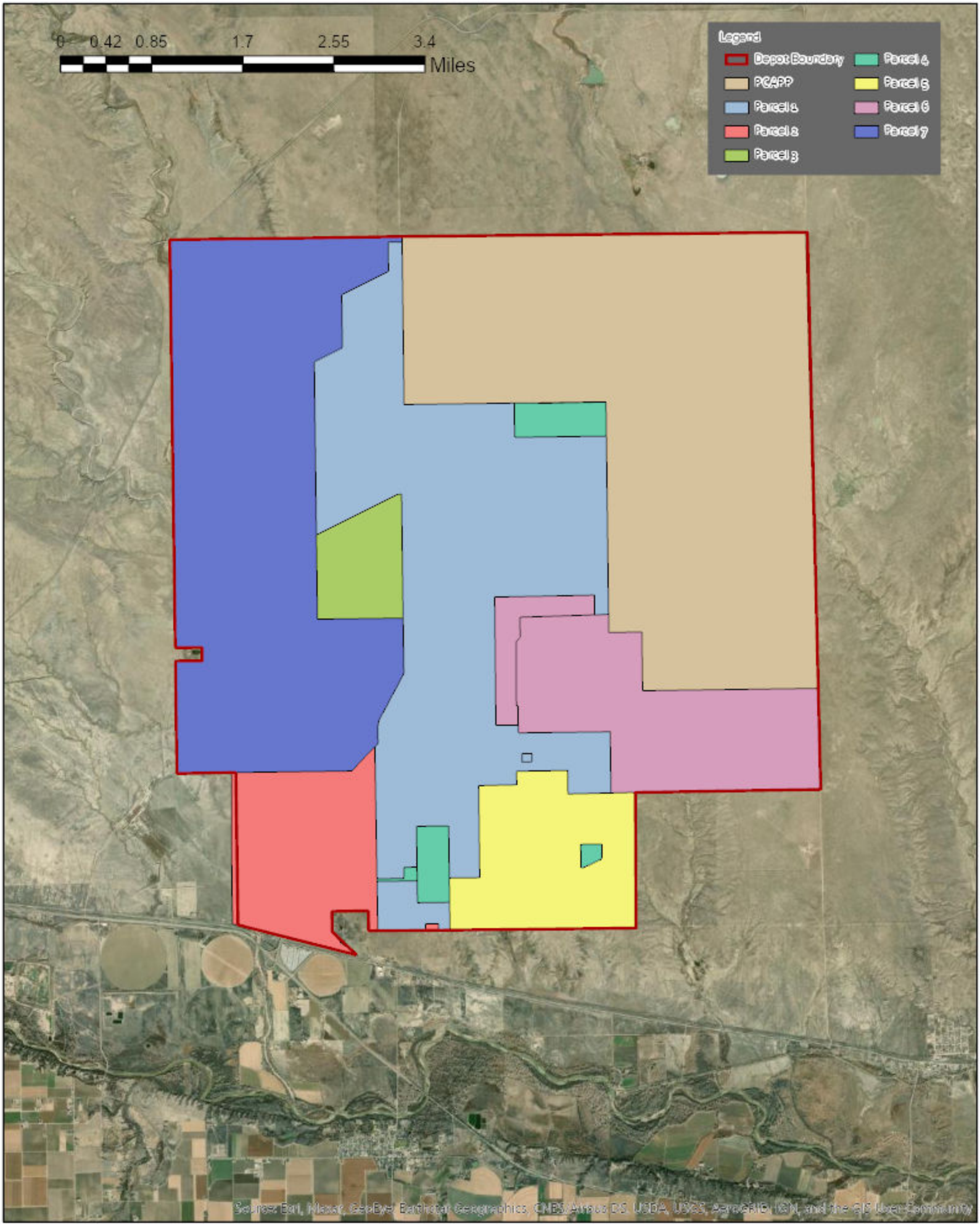


Figure 8: Surface Waters

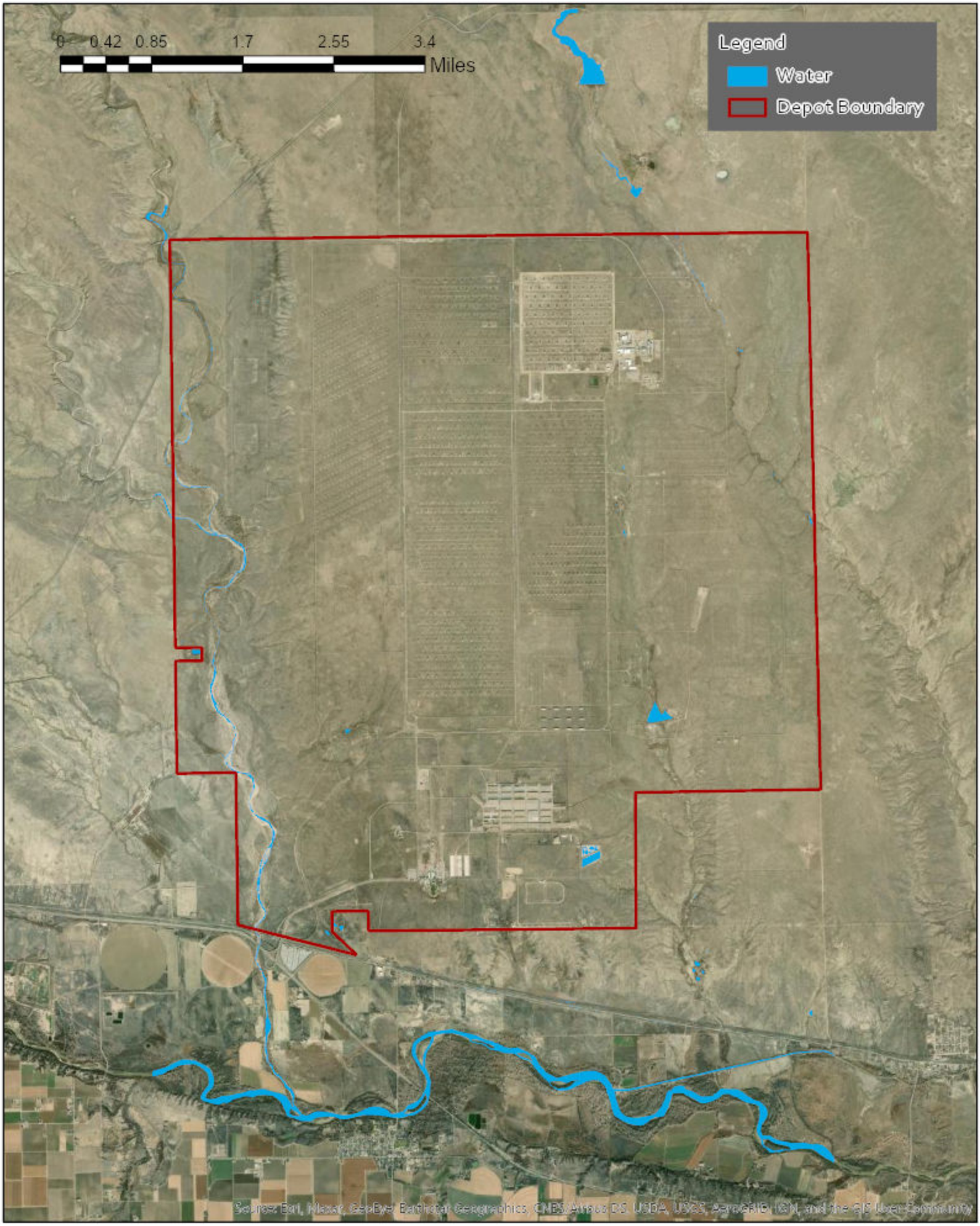


Figure 9: Wetlands

APPENDIX 1: List of Acronyms

Acronyms used in this document

ACUB	Army Compatible Use Buffer
AFWA	Association of Fish and Wildlife Agencies
APHIS	U.S. Animal and Plant Health Inspection Service
AR	Army Regulation
ARPA	Archeological Resources Protection Act of 1979
ASA	Ammunition Storage Area
AWS	Ammunition Workshop Site
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	Best Management Practice
BRAC	Base Realignment and Closure
CCR	Code of Colorado Regulations
CDPHE	Colorado Department of Public Health and Environment
CPW	Colorado Division of Parks and Wildlife
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CLEO	Conservation Law Enforcement Officer
CLEP	Conservation Law Enforcement Program
CNHP	Colorado Natural Heritage Program
CSP	Central Shortgrass Prairie
CWA	Clean Water Act
CX	Categorical Exclusion (NEPA process)
DA	Department of the Army
DAU	Data Analysis Unit
DoD	Department of Defense
DoDI	Department of Defense Instruction

DPW	Department of Public Works
DWR	Division of Water Resources
EA	Environmental Assessment
EDS	Explosive Destruction System
EIS	Environmental Impact Statement
EMO	Environmental Management Office
EMS	Environmental Management System
ESA	Endangered Species Act
FREP	Front Range Ecoregional Partnership
GIS	Geographic Information System
HAZMAT	Hazardous Material
IA	Interagency Agreement
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IPM I	Integrated Pest Management
IPMC	Integrated Pest Management Coordinator
IPMP	Integrated Pest Management Plan
IUCN	International Union for Conservation of Nature
LBB	Little brown bat
LRAM	Land Rehabilitation and Maintenance
MBTA	Migratory Bird Treaty Act
mg/L	Milligrams per liter
MOU	Memorandum of Understanding
MRA	Military Readiness Activity
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966

NPDES	National Pollutant Discharge Elimination System
NRM	Natural Resources Manager
NWI	National Wetlands Inventory
NWP	Nationwide Permit
PAO	Public Affairs Office
PCAPP	Pueblo Chemical Agent-Destruction Pilot Plant
PCD	Pueblo Chemical Depot
PCDFD	PCD Fire Department
PUDADA	Pueblo Depot Activity Development Authority
RCRA	Resource Conservation and Recovery Act
REC	Record of Environmental Consideration
RGP	Regional General Permit
SAR	Species at Risk
SDC	Static Detonation Chamber
SLB	State Land Board
SLED	Security and Law Enforcement Division
SWMU	Solid Waste Management Unit
T&E	Threatened and Endangered
TTC	Transportation Technology Center
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WNS	White-nose syndrome

APPENDIX 2: Vertebrate Species List

PCD Vertebrates

[1]Federal

BCC (Birds of Conservation Concern) – Species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973.

FP (Federal Petitioned) – A formal request, with the support of adequate biological data, suggesting that a species, with the support of adequate biological data, be listed.

FC (Federal Candidate) – Plants and animals that have been studied and the Service has concluded that they should be proposed for addition to the Federal endangered and threatened species list.

FT (Federal Threatened) – The classification provided to an animal or plant likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

[2]State

[2]ST (State Threatened) – An animal or plant likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

SE (State Endangered) – Any species which is in danger of extinction throughout all or a significant portion of its range.

SC (Species of Special Concern – Declining or potentially declining species of greatest conservation need.

[3]Colorado Natural Heritage Program (CNHP)

WL (Watchlisted) – These species are common if you find the right habitat, but are still species of concern due to either habitat imperilment or a general decline in the species population.

PT (Partial Tracking) – These species are common if you find the right habitat, but healthy populations or high quality occurrences are of conservation concern.

FT (Fully Tracked) – These species are vulnerable and imperiled at any location.

[4] NON NATIVE SPECIES

AMPHIBIANS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED
U.S. PUEBLO CHEMICAL DEPOT, PUEBLO, COLORADO

SPECIES			VEGETATION TYPES/HABITATS					
Common Name	**Scientific Name**	**Observed on Site**	**Shortgrass Prairie**	**Northern Sandhill Prairie**	**Greasewood Scrub**	**Wetlands**	**Riparian Woodland**	**Disturbed/ Landscaped**
Barred Tiger Salamander	*Ambystoma mavortium*	X	X			X		
Couch's Spadefoot	*Scaphiopus couchii*	X	X			X	X	
Plains Spadefoot	*Spea bombifrons*							
Mexican Spadefoot	*Spea multiplicata*							
Great Plains Toad	*Anaxyrus cognatus*		X	X	X	X	X	X
Red-spotted Toad	*Anaxyrus punctatus*							
Woodhouse's Toad	*Anaxyrus woodhousii*	X	X	X	X	X	X	X
Boreal Chorus Frog	*Pseudacris maculata*	X				X	X	
Plains Leopard Frog	*Lithobates blairi*	X				X	X	
American Bullfrog	*Lithobates catesbeiana*	X				X	X	
Northern Leopard Frog	*Lithobates pipiens*	X				X	X	

REPTILES AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED
U.S. PUEBLO CHEMICAL DEPOT, PUEBLO, COLORADO

SPECIES			VEGETATION TYPES/HABITATS					
Common Name	**Scientific Name**	**Observed on Site**	**Shortgrass Prairie**	**Northern Sandhill Prairie**	**Greasewood Scrub**	**Wetlands**	**Riparian Woodland**	**Disturbed/ Landscaped**
Painted Turtle	*Chrysemys picta*	X				X		
Ornate Box Turtle	*Terrapene ornata*							
Lesser Earless Lizard	*Holbrookia maculata*	X	X	X	X		X	X
Texas Horned Lizard	*Phrynosoma cornutum*							
Hernandez's Short-horned Lizard	*Phrynosoma hernandesi*							
Prairie Lizard	*Sceloporus consobrinus*	X	X	X	X		X	X
Colorado Checkered Whiptail	*Aspidoscelis neotesselata*	X		X			X	
Six-lined Racerunner	*Aspidoscelis sexlineata*		X	X	X		X	X
Great Plains Skink	*Plestiodon obsoletus*			X		X	X	
Glossy Snake	*Arizona elegans*		X	X			X	
North American Racer	*Coluber constrictor*	X	X	X	X		X	X
Great Plains Rat Snake	*Pantherophis emoryi*		X	X	X		X	
Plains Hog-nosed Snake	*Heterodon nasicus*	X	X	X	X		X	X
Chihuahuan Nightsnake	*Hypsiglena jani*		X					
Milk Snake	*Lampropeltis triangulum*		X	X	X		X	X
Coachwhip	*Masticophis flagellum*	X	X	X	X		X	X
Northern Watersnake	*Nerodia sipedon*					X		
Gophersnake	*Pituophis catenifer*	X	X	X	X		X	X
Plains Black-headed Snake	*Tantilla nigriceps*		X	X				
Black-necked Gartersnake	*Thamnophis cyrtopsis*		X	X		X	X	
Terrestrial Gartersnake	*Thamnophis elegans*		X	X	X	X	X	X
Plains Gartersnake	*Thamnophis radix*	X	X	X	X	X	X	X
Prairie Rattlesnake	*Crotalus viridis*	X	X	X	X	X	X	X
Massasauga	*Sistrurus catenatus*		X	X				

MAMMALS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED
U.S. PUEBLO CHEMICAL DEPOT, PUEBLO, COLORADO

SPECIES		Observed on Site	VEGETATION TYPES/HABITATS					
Common Name	**Scientific Name**		**Shortgrass Prairie**	**Northern Sandhill Prairie**	**Greasewood Scrub**	**Wetlands**	**Riparian Woodland**	**Disturbed/ Landscaped**
Marsupials:								
Virginia Opossum	*Didelphis virginiana*						X	
Shrews:								
Least Shrew	*Cryptotis parva*	X	X	X	X		X	X
Desert Shrew	*Cryptotis crawfordi*		X	X	X		X	X
Bats:								
Little Brown Myotis	*Myotis lucifugus*		X	X	X	X	X	X
Fringed Myotis	*Myotis thysanodes*				X			
Yuma Myotis	*Myotis yumanensis*					X	X	X
Red Bat	*Lasiurus borealis*						X	X
Hoary Bat	*Lasiurus cinereus*						X	
Silver-haired Bat	*Lasionycteris noctivagans*					X	X	X
Big Brown Bat	*Eptesicus fuscus*	X	X	X	X	X	X	X
Townsend's Big-eared Bat	*Plecotus townsendii*				X	X	X	X
Pallid Bat	*Antrozous pallidus*				X	X	X	
Brazilian Free-tailed Bat	*Tadarida brasiliensis*		X	X	X			
Big Free-tailed Bat	*Nyctinomops macrotis*		X	X	X			
Rabbits and Hares:								
Desert Cottontail	*Sylvilagus audubonii*	X	X	X	X		X	X
Black-tailed Jackrabbit	*Lepus californicus*	X	X	X	X			
White-tailed Jackrabbit	*Lepus townsendii*		X					
Rodents:								
Spotted Ground Squirrel	*Spermophilus spilosoma*	X	X	X				

MAMMALS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED (cont.)

Common Name	Scientific Name	Observed on Site	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands	Riparian Woodland	Disturbed/ Landscaped
Thirteen-lined Ground Squirrel	*Spermophilus tridecemlineatus*	X	X					
Black-tailed Prairie Dog	*Cynomys ludovicianus*	X	X					
Fox Squirrel	*Sciurus niger*	X						X
Botta's Pocket Gopher	*Thomomys bottae*						X	
Plains Pocket Gopher	*Geomys bursarius*		X	X				
Yellow-faced Pocket Gopher	*Cratogeomys castanops*		X	X				
Plains Pocket Mouse	*Perognathus flavescens*		X	X				
Silky Pocket Mouse	*Perognathus flavus*		X	X				
Hispid Pocket Mouse	*Chaetodipus hispidus*		X	X				
Ord's Kangaroo Rat	*Dipodomys ordii*	X	X	X	X			
Western Harvest Mouse	*Reithrodontomys megalotis*	X		X	X	X	X	X
Plains Harvest Mouse	*Reithrodontomys montanus*	X	X					
Brush Mouse	*Peromyscus boylii*							
White-footed Mouse	*Peromyscus leucopus*	X	X	X				
Deer Mouse	*Peromyscus maniculatus*	X	X	X				
Northern Grasshopper Mouse	*Onychomys leucogaster*	X	X	X				
Hispid Cotton Rat	*Sigmodon hispidus*	X	X			X	X	
White-throated Woodrat	*Neotoma albigula*	X	X	X	X		X	X
Eastern Woodrat	*Neotoma floridana*		X	X	X		X	
House Mouse	*Mus musculus*							X
Norway Rat	*Rattus norvegicus*							X
Prairie Vole	*Microtus ochrogaster*	X	X	X	X		X	
Common Porcupine	*Erethizon dorsatum*	X					X	

MAMMALS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED (cont.)

Common Name	Scientific Name	Observed on Site	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands	Riparian Woodland	Disturbed/ Landscaped
Carnivores:								
Coyote	*Canis latrans*	X	X	X	X		X	X
Swift Fox	*Vulpes velox*	X	X					
Red Fox	*Vulpes vulpes*							
Gray Fox	*Urocyon cinereoargenteus*						X	
Raccoon	*Procyon lotor*	X				X	X	
Long-tailed Weasel	*Mustela frenata*	X	X	X	X	X	X	X
Black-footed Ferret	*Mustela nigripes*		X					
Mink	*Mustela vison*					X	X	
American Badger	*Taxidea taxus*	X	X	X	X		X	X
Striped Skunk	*Mephitis mephitis*	X	X	X	X		X	X
Mountain Lion	*Felis concolor*	X					X	
Bobcat	*Lynx rufus*	X					X	X
Ungulates:								
American Elk	*Cervus elaphus*	X	X		X			
Mule Deer	*Odocoileus hemionus*	X	X		X		X	
White-tailed Deer	*Odocoileus virginianus*	X					X	
Pronghorn	*Antilocapra americana*	X	X	X	X			

BIRDS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED
U.S. PUEBLO CHEMICAL DEPOT, PUEBLO, COLORADO

SPECIES		Observed on Site	VEGETATION TYPES/HABITATS					
Common Name	**Scientific Name**		**Shortgrass Prairie**	**Northern Sandhill Prairie**	**Greasewood Scrub**	**Wetlands Ponds**	**Riparian Woodlands**	**Disturbed Landscape**
Grebes:								
Pied-billed Grebe	*Podilymbus podiceps*	O/S				X		
Horned Grebe	*Podiceps aurilus*	P/M				X		
Eared Grebe	*Podiceps nigricollis*	O/S				X		
Western Grebe	*Aechmophorus occidentalis*	O/S				X		
Clark's Grebe	*Aechmophorus clarkii*	P/M				X		
Pelicans:								
American White Pelican	*Pelecanus erthrorynchos*	O/S				X		
Cormorants:								
Double-crested Cormorant	*Phalacrocorax auritus*	O/S				X		
Bitterns and Herons:								
American Bittern	*Botaurus lentiginosus*	O/S				X		
Great Blue Heron	*Ardea herodias*	O/S				X		
Black-crowned Night-heron	*Nycticorax nycticorax*	O/S				X		
Ibises:								
White-faced Ibis	*Plegadis chihi*	O/M				X		
Waterfowl:								
Snow Goose	*Chen caerulescens*	O/M				X		
Canada Goose	*Branta canadensis*	O/S				X		
Green-winged Teal	*Anas crecca*	O/M				X		
Mallard	*Anas platyrhynchos*	O/S				X		
Northern Pintail	*Anas acuta*	O/M				X		
Blue-winged Teal	*Anas querquedula*	O/M				X		
Cinnamon Teal	*Anas cyanoptera*	O/M				X		

BIRDS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED (cont.)

Common Name	Scientific Name	Observed on Site	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands Ponds	Riparian Woodlands	Disturbed Landscape
Northern Shoveler	*Anas clypeata*	O/M				X		
Gadwall	*Anas strepera*	O/M				X		
American Wigeon	*Anas americana*	O/M				X		
Redhead	*Aythya americana*	O/M				X		
Lesser Scaup	*Aythya affinis*	O/M				X		
Common Goldeneye	*Bucephala clangula*	O/M				X		
Bufflehead	*Bucephala albeola*	O/M				X		
Ruddy Duck	*Oxyura jamaicensis*	O/S				X		
Vultures:								
Turkey Vulture	*Cathartes aura*	O/S	X	X	X	X	X	X
Raptors:								
Bald Eagle	*Haliaeetus leucocephalus*	O/W	X	X	X			
Northern Harrier	*Circus cyaneus*	O/S	X	X	X	X		
Cooper's Hawk	*Accipiter cooperii*	O/W					X	X
Swainson's Hawk	*Buteo swainsoni*	O/S	X	X	X			
Red-tailed Hawk	*Buteo jamaicensis*	O/S	X	X	X		X	
Ferruginous Hawk	*Buteo regalis*	O/S	X	X	X		X	
Rough-legged Hawk	*Buteo lagopus*	O/W	X	X	X		X	
Golden Eagle	*Aquila chrysaetos*	O/W	X	X	X			
American Kestrel	*Falco sparverius*	O/S	X	X	X		X	X
Merlin	*Falco columbarius*	O/W	X	X	X		X	
Prairie Falcon	*Falco mexicanus*	O/S	X	X	X			
Peregrine Falcon	*Falco peregrinus*	O/S	X	X	X			
Game Birds:								
Scaled Quail	*Callipepla squamata*	O/Y	X	X	X			
Rails and Coots:								
Virginia Rail	*Rallus limicola*	O/S				X		

BIRDS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED (cont.)

Common Name	Scientific Name	Observed on Site	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands Ponds	Riparian Woodlands	Disturbed Landscape
Sora	*Porzana carolina*	O/S				X		
American Coot	*Fulica americana*	O/S				X		
Cranes:								
Sandhill Crane	*Grus canadensis*	O/M				X		
Shorebirds:								
Killdeer	*Charadrius vociferus*	O/S	X					X
Mountain Plover	*Charadrius montanus*	O/X	X					
Willet	*Catoptrophorus semipalmatus*	O/M				X		
Long-billed Curlew	*Numenius americanus*	O/S	X					
Gulls and Terns:								
Franklin's Gull	*Larus pipixcan*	P/M				X		
Ring-billed Gull	*Larus delawarensis*	P/M				X		
California Gull	*Larus californicus*	P/M				X		
Herring Gull	*Larus argentatus*	P/M				X		
Black Tern	*Chlidonias niger*	O/M				X		
Pigeons and Doves:								
Rock Dove (Common Pigeon)	*Columbia livia*	O/Y				X		X
Mourning Dove	*Zenaida macroura*	O/S	X	X	X		X	X
Eurasion Collared-Dove	*Streptopelia decaocto*	O/S	X	X	X		X	X
Roadrunners:								
Greater Roadrunner	*Geococcyx californianus*	O/Y		X	X			X
Owls:								
Barn Owl	Tyto alba	O/S				X		
Western Screech-owl	Otus kennicottii	P/S				X		
Great Horned Owl	Bubo virginianus	O/Y				X		
Burrowing Owl	Athene cunicularia	O/S				X		
Long-eared Owl	Asis otus	P/S				X		

BIRDS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED (cont.)

Common Name	Scientific Name	Observed on Site	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands Ponds	Riparian Woodlands	Disturbed Landscape
Short-eared Owl	Asio flammeus	P/S	X			X		
Nighthawks:								
Common Nighthawk	*Chordeiles minor*	O/S	X	X	X		X	X
Woodpeckers:								
Red-headed Woodpecker	*Melanerpes erythrocephalus*	P/S					X	
Ladder-backed Woodpecker	*Picoides scelaris*	P/S					X	
Downy Woodpecker	*Picoides pubescens*	P/S					X	X
Northern Flicker	*Colaptes auratus*	O/S					X	X
Flycatchers:								
Say's Phoebe	*Sayornis saya*	O/S	X	X	X			X
Western Kingbird	*Tyrannus verticalis*	O/S	X	X	X		X	X
Eastern Kingbird	*Tyrannus tyrannus*	O/S					X	X
Larks:								
Horned Lark	*Eremophila alpestris*	O/S	X	X	X			
Swallows:								
Tree Swallow	*Tachycineta bicolor*	P/M				X	X	X
Northern Rough-winged Swallc	*Stelgidopteryx serripennis*	P/S	X	X	X	X		
Bank Swallow	*Riparia riparia*	P/S	X	X	X	X		
Cliff Swallow	*Hirundo pyrrhonota*	O/S	X	X	X			X
Barn Swallow	*Hirundo rustica*	O/S	X	X	X			X
Magpies and Crows:								
Black-billed Magpie	*Pica pica*	O/Y	X	X	X		X	X
American Crow	*Corvus brachyrhynchos*	O/Y	X	X	X	X	X	X
Chihuahuan Raven	*Corvus cryptoleucus*	O/Y	X	X	X			X
Chickadees:								
Black-capped Chickadee	*Parus atricapillus*	P/S					X	X

BIRDS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED (cont.)

Common Name	Scientific Name	Observed on Site	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands Ponds	Riparian Woodlands	Disturbed Landscape
Thrushes:								
Mountain Bluebird	*Sialia currucoides*	O/M	X	X	X			
Swainson's Thrush	*Catharus ustulatus*	P/M					X	X
American Robin	*Turdus migratorius*	O/S						X
Northern Mockingbird	*Mimus polyglottos*	O/S	X	X	X		X	X
Sage Thrasher	*Oreoscoptes montanus*	P/M	X	X	X			
Curve-billed Thrasher	*Taxostoma curvirostre*	O/S		X	X		X	X
Shrikes:								
Loggerhead Shrike	*Lanius ludovicianus*	O/S	X	X	X			X
Starlings:								
European Starling	*Sturnus vulgaris*	O/Y					X	X
Warblers:								
Yellow Warbler	*Dendroica petechia*	P/S				X	X	X
Myrtle Warbler	*Dendroica coronata*	P/M					X	X
Common Yellowthroat	*Geothlypis trichas*	P/M				X		
Grosbeaks and Buntings:								
Blue Grosbeak	*Guiraca caerulea*	O/S			X	X	X	
New World Sparrows:								
Cassin's Sparrow	*Aimophila cassinii*	O/S		X	X			
American Tree Sparrow	*Spizella arborea*	P/W			X		X	
Vesper Sparrow	*Pooecetes gramineus*	P/M	X	X	X		X	
Lark Sparrow	*Chondestes grammacus*	O/S	X	X	X			
Lark Bunting	*Calamospiza melanocorys*	O/S	X	X				
Grasshopper Sparrow	*Ammodramus savannarum*	O/S	X	X				
Song Sparrow	*Melospiza melodia*	P/S				X	X	
Lincoln's Sparrow	*Melospiza lincolnii*	P/M				X	X	
White-crowned Sparrow	*Zonotrichia leucophrys*	O/M			X	X	X	

BIRDS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED (cont.)

Common Name	Scientific Name	Observed on Site	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands Ponds	Riparian Woodlands	Disturbed Landscape
Dark-eyed Junco	*Junco hyemalis*	P/W			X		X	
Blackbirds and Orioles:								
Red-winged Blackbird	*Agelaius phoeniceus*	O/S				X	X	
Western Meadowlark	*Sturnella neglecta*	O/S	X	X				
Yellow-headed Blackbird	*Xanthocephalus xanthocephalu*	O/X				X		X
Brewer's Blackbird	*Euphagus cyanocephalus*	P/Y	X	X	X	X		X
Great-tailed Grackle	*Quiscalus mexicanus*	O/M			X	X	X	
Common Grackle	*Quiscalus quiscula*	O/S					X	X
Brown-headed Cowbird	*Molothrus ater*	O/S	X	X	X	X	X	X
Bullock's Oriole	*Icterus galbula*	O/S				X	X	X
Finches:								
House Finch	*Carpodacus mexicanus*	P/Y			X		X	X
American Goldfinch	*Carduelis tristis*	P/Y					X	X
Old World Sparrows:								
House Sparrow	*Passer domesticus*	O/Y						X

GRASSHOPPERS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED
U.S. PUEBLO CHEMICAL DEPOT, PUEBLO, COLORADO

SPECIES		Observed on Site	VEGETATION TYPES/HABITATS					
Common Name	Scientific Name		Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands	Riparian Woodland	Disturbed Landscape
Green fool grasshopper	*Acrolophitus hirtipes*	X	X	X	X			
Thistle grasshopper	*Aeoloplides turnbulli*	X	X	X	X			
Whitewhiskered grasshopper	*Ageneotettix deorum*	X	X	X	X			
Striped slant-faced grasshopper	*Amphitornus coloradus*	X	X	X	X			
Speckle-winged rangeland grasshopper	*Arphia conspersa*	X	X	X				
Redwinged grasshopper	*Arphia pseudoneitana*	X	X					
Big-headed grasshopper	*Aulocara elliotti*	X	X	X	X			
White cross grasshopper	*Aulocara femoratum*	X	X		X			
Ebony grasshopper	*Boopedon nubilum*	X			X			
Meadow grasshopper	*Chorthippus curtipennis*	X			X			
Crenulated grasshopper	*Cordillacris crenulata*	X	X	X	X			
Spotted wing grashopper	*Cordillacris occipitalis*	X	X	X	X			
Pictured grasshopper	*Dactylotum bicolor*	X	X	X	X			
Hayden's grasshopper	*Derotmema haydeni*	X	X	X	X			

GRASSHOPPERS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED (cont.)

Common Name	Scientific Name	Observed on Site	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands	Riparian Woodland	Disturbed Landscape
Dusky grasshopper	*Encoptolophus costalis*	X	X					
Velvet-striped grasshopper	*Eritettix simplex*	X	X	X	X			
Three-banded grasshopper	*Hadrotettix trifasciatus*	X	X	X	X			
Showy grasshopper	*Hesperotettix speciosus*	X		X	X			
Snakeweed grasshopper	*Hesperotettix viridis*	X	X	X	X			
Wrinkled grasshopper	*Hippiscus ocelote*	X			X			
Apache grasshopper	*Hippopedon capito*	X			X			
Narrowwinged sand grasshopper	*Melanoplus angustipennis*	X	X	X	X			
Arizona spur-throat grasshopper	*Melanoplus arizonae*	X	X	X	X			
Two-striped grasshopper	*Melanoplus bivattatus*	X						
Sagebrush gasshopper	*Melanoplus bowditchi*	X	X	X	X			
Little pasture spur-throated grasshopper	*Melanoplus confusus*	X	X	X	X			
Redlegged grasshopper	*Melanoplus femurrubrum*	X	X		X			
Striped sand grasshopper	*Melanoplus foedus*	X	X	X	X			
Gladston grasshopper	*Melanoplus gladstoni*	X	X	X	X			
Lakin grasshopper	*Melanoplus lakinus*	X		X				

GRASSHOPPERS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED (cont.)

Common Name	Scientific Name	Observed on Site	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands	Riparian Woodland	Disturbed Landscape
Flabellate grasshopper	*Melanoplus occidentalis*	X	X	X	X			
Packard's grasshopper	*Melanoplus packardii*	X	X	X	X			
Regal grasshopper	*Melanoplus regalis*	X	X	X				
Lessor migratory grasshopper	*Melanoplus sanguinipes*	X	X	X	X			
Short-horned grasshopper	*Melanoplus spp.*	X	X	X	X			
Twostriped slantfaced grasshopper	*Mermiria bivittata*	X	X	X	X			
Slant faced grasshopper	*Mermiria picta*	X	X	X				
Platt range grasshopper	*Mesobregma plattei*	X	X	X	X			
Pard grasshopper	*Metator pardalinus*	X						
Obscure grasshopper	*Opeia obscura*	X	X	X	X			
Haldeman's grasshopper	*Pardalophora haldemani*	X		X				
Pale toothpick grasshopper	*Paropomala pallida*	X		X	X			
New Mexico toothpick grasshopper	*Paropomala virgata*	X	X					
Wyoming toothpick grasshopper	*Paropomala wyomingensis*	X	X	X	X			
Fourspotted grasshopper	*Philobostroma quadrimaculatum*	X	X	X	X			

GRASSHOPPERS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED (cont.)

Common Name	Scientific Name	Observed on Site	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands	Riparian Woodland	Disturbed Landscape
Brownspotted grasshopper	*Psoloessa delicatula*	X	X	X	X			
Texas spotted range grasshopper	*Psoloessa texana*	X	X	X	X			
Spotted bird grasshopper	*Schistocerca alutacea*	X	X	X	X			
Mottled sand grasshopper	*Spharagemon collare*	X	X	X				
Orangelegged grasshopper	*Spharagemon equale*	X						
Finned grasshopper	*Trachyrhachys aspera*	X	X	X	X			
Kiowa range grasshopper	*Trachyrhachys kiowa*	X	X		X			
Broad-banded grasshopper	*Trimerotropis latifasciatus*	X	X	X	X			
Magnificent grasshopper	*Trimerotropis magnifica*	X	X					
Black-winged grasshopper	*Trimerotropis melanoptera*	X		X				
Pallid-winged grasshopper	*Trimerotropis pallidipennis*	X	X	X	X			
Barren land grasshopper	*Trimerotropis pistrinaria*	X		X				
Great crested grasshopper	*Tropidolophus formosus*	X	X	X	X			
Redshanked grasshopper	*Xanthrippus corallipes*	X	X	X	X			

Source for grasshopper data: Sovell 2005, Sovell and Schneider 2005.

APPENDIX 3: Plant Species List

OBSERVED PLANTS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED PUEBLO CHEMICAL DEPOT, PUEBLO, COLORADO

Original list compiled by Merino, additional species added by Renée Rondeau

TREES

Scientific Name	Common Name	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands	Riparian Woodland	Disturbed/ Landscaped
Celtis reticulata	Netleaf Hackberry				F	F	
Elaeagnus angustifolia	Russian Olive				F	F	X
Picea englemannii	Engelmann Spruce						X
Picea pungens	Colorado Blue Spruce						X
Pinus ponderosa	Ponderosa Pine						X
Populus deltoides	Plains Cottonwood				F	F	
Salix amygdaloides	Peachleaf Willow				F	F	
Salix matsudana	Globe Willow						X
Tamarix ramosissima	Saltcedar, Tamarack, Tamarisk				F	F	X
Ulmus americana	American Elm						X
Ulmus pumila	Chinese Elm						X

F - Faculative

X - Recorded as present in vegetation type

OBSERVED PLANTS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED PUEBLO CHEMICAL DEPOT, PUEBLO, COLORADO

Original list compiled by Merino, additional species added by Renée Rondeau

SHRUBS

Scientific Name	Common Name	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands	Riparian Woodland	Disturbed/ Landscaped
Atriplex canescens	Fourwing Saltbush	X		X	F		
Atriplex gardneri	Gardner Saltbush	X					
Atriplex confertifolia	Shadscale			X			
Chrysothamnus nauseosus	Rubber Rabbitbrush	X		X	F		X
Chrysothamnus pulchellus	Rabbitbrush			X			
Chrysothamnus viscidiflorus	Little Rabbitbrush	X	X	X			
Glycyrrhiza lepidota	Wild Licorice				F	F	
Gutierrezia sarothrae	Snakeweed	X	X	X			X
Krascheninnikovia lanata (Ceratoides lanata)	Winterfat	X					
Oligosporus filifolius	Sand Sagebrush	X	X	X			
Rhus aromatica subsp. trilobata	Skunkbrush				F	F	
Ribes aureum	Golden Currant				F	F	
Salix exigua	Coyote/Sandbar Willow				O		
Sarcobatus vermiculatus	Black Greasewood			X			
Symphoricarpos occidentalis	Western Snowberry				F	F	

F - Faculative

O - Obligate

X - Recorded as present in vegetation type

OBSERVED PLANTS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED PUEBLO CHEMICAL DEPOT, PUEBLO, COLORADO

Original list compiled by Merino, additional species added by Renée Rondeau

GRASSES AND GRASSLIKE PLANTS:

Scientific Name	Common Name	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands	Riparian Woodland	Disturbed/ Landscaped
Agrostis stolonifera	Redtop Bent				O		
Andropogon hallii	Sand Bluestem		X				
Andropogon saccharoides	Silver Bluestein	X					
Anisantha tectorum (Bromus tectorum)	Cheatgrass	X	X	X			X
Aristida divaricata	Poverty Three-awn	X	X	X			X
Aristida purpurea	Purple Three-awn	X	X	X			
Avena fatua	Wild Oats	X					X
Bolboschoenus maritimus	Bulrush				O		
Bouteloua curtipendula	Sideoats Grama	X		X			
Bromus japonicus	Japanese Brome			X			X
Buchloe dactyloides	Buffalograss	X					
Calamovilfa longifolia	Sandreed		X				
Carex lanuginosa	Hairy Sedge				O		
Carex nebrascensis	Nebraska Sedge				O	O	
Chondrosurn gracile (Bouteloua gracilis)	Blue Grama	X	X	X			
Chondrosurn hirsutum (Bouteloua hirsuta)	Hairy Grama	X	X				
Critesion jubaturn (Hordeum jubatum)	Foxtail Barley			X		F	
Cyperus odoratus	Cyperus	X		X		X	
Digitaria sanguinalis	Large Crabgrass						X
Leptochloa fascicularis	Bearded Sprangletop	X					
Distichlis spicata	Saltgrass		X	X	F	F	
Echinochloa crus-galli	Barnyard Grass						X
Eleocharis palustris	Spikerush				O	O	
Eleocharis spp.	Spikerush			X	O	O	

GRASSES AND GRASSLIKE PLANTS (cont.):							
Scientific Name	**Common Name**	**Shortgrass Prairie**	**Northern Sandhill Prairie**	**Greasewood Scrub**	**Wetlands**	**Riparian Woodland**	**Disturbed/ Landscaped**
Elymus canadensis	Canada Wildrye				F		
Elymus elymoides (Sitanion hystrix)	Squirreltail	X	X	X			X
Elymus longifolius	Squirreltail	X	X				
Elytrigia intermedia (Agropyron intermedia)	Intermediate Wheatgrass	X					
Elytrigia repens (Agropyron repens)	Quackgrass	X					
Eragrostis cilianensis	Stinkgrass						
Eragrostis trichodes	Sand Lovegrass						
Festuca pratensis	Meadow Fescue				F	F	
Hilaria jamesii	Galletagrass	X	X	X			
Juncus arcticus	Arctic Rush				O	O	
Juncus balticus	Baltic Rush				O	O	
Juncus effusus	Soft Rush				O	O	
Juncus gerardii	Blackgrass				O		
Koeleria macrantha	Prairie Junegrass	X	X			F	
Muhlenbergia racemosa	Green Muhly				Seeps		
Muhlenbergia torreyi	Ring Muhly	X		X			
Monroa squarrosa	False Buffalograss	X	X				
Panicunt virgatum	Switchgrass				F	F	X
Pascopyrum smithii (Agropyron smithii)	Western Wheatgrass	X	X				X
Phalaroides arundinacea	Reed Canary Grass				O	O	
Phleum pratense	Timothy				F	F	
Phragmites australis	Common Reed				F	F	
Poa compressa	Canada Bluegrass		X				
Poa pratensis	Kentucky Bluegrass			X	F	F	X
Polypogon monspeliensis	Rabbitfoot Grass				O	O	X
Redfieldia flexuosa	Blowout Grass		X	X			
Schedonnardus paniculatus	Tumblegrass	X		X			

GRASSES AND GRASSLIKE PLANTS (cont.):							
Scientific Name	**Common Name**	**Shortgrass Prairie**	**Northern Sandhill Prairie**	**Greasewood Scrub**	**Wetlands**	**Riparian Woodland**	**Disturbed/ Landscaped**
Schoenoplectus pungens (Scirpus americanus)	Three-square Bulrush				O		
Schizachyrium scoparium	Little Bluestem				Boone Creek		
Scirpus microcarpus	Bulrush				O		
Scirpus pallidus	Bulrush				O		
Scirpus validus	Great Bulrush				O	O	
Sorgastrum nutans	Indian Grass	X	X				
Sparganium eurycarpum	Bur-reed				O	O	
Sporobolus airoides	Alkali Sacaton		X	X			
Sporobolus cryptandrus	Sand Dropseed	X	X	X			
Stipa comata	Needle-and-thread		X				
Stipa hymenoides (Oryzopsis hymenoides)	Indian Ricegrass	X	X	X			
Triglochin maritima	Arrowgrass						
Typha angustifolia	Narrow-leaved Cattail				O	O	
Typha latifolia	Broad-leaved Cattail				O	O	
Vulpia octoflora	Sixweeks Fescue	X	X	X			

F - Faculative

O - Obligate

X - Recorded as present in vegetation type

OBSERVED PLANTS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED PUEBLO CHEMICAL DEPOT, PUEBLO, COLORADO

Original list compiled by Merino, additional species added by Renée Rondeau

FORBS:

Scientific Name	Common Name	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands	Riparian Woodland	Disturbed/ Landscaped
Alyssum desertorum	Alyssum	X		X			
Amaranthus retroflexus	Redroot Pigweed						
Ambrosia psilostachya	Ragweed	X	X	X			
Amsinckia retrorsa	Fiddleneck	X					
Amsinckia spp.	Fiddleneck	X					
Apocynum cannabinum	Hemp Dogbane				F	F	
Argemone polyanthemos	Annual Prickly Poppy	X					X
Artemisia dracunculus	Wild Tarragon	X		X			X
Artemisia ludoviciana	Cudweed Sagewort	X		X			X
Asclepias arenaria	Dwarf Milkweed		X				
Asclepias incarnata	Swamp Milkweed				O	O	
Asclepias latifolia	Milkweed			X			
Asclepias speciosa	Showy Milkweed	X		X			X
Asclepias uncialis	Milkweed	X	X				X
Asparagus officinalis	Asparagus				F	F	
Aster adscendens	Aster	X					
Aster falcatus	Aster				O		
Aster spp.	Aster	X					X
Astragalus ceramicus	Painted Milk Vetch		X				
Astragalus crassicarpus	Milk Vetch		X				
Astragalus mollissimus	Milk Vetch	X	X				
Astragalus pectinatus	Milk Vetch		X	X			
Bassia sieversiana (Kochia scoparia)	Ironweed (Kochia)	X					X
Brickellia eupatoroides	Brickell bush	X				X	

FORBS (cont.):							
Scientific Name	**Common Name**	**Shortgrass Prairie**	**Northern Sandhill Prairie**	**Greasewood Scrub**	**Wetlands**	**Riparian Woodland**	**Disturbed/ Landscaped**
Camelina spp.	False Flax	X		X			X
Chamaesyce glyptosperma (Euphorbia glyptosperma)	Ridge-seeded Spurge	X	X				X
Chenopodium album	Goosefoot	X					X
Chenopodium cycloides	Goosefoot		X				
Chenopodium incanum	Goosefoot						
Cirsium arvense	Canada Thistle	X					X
Cirsium undulatum	Wavyleaf Thistle	X					X
Cirsium vulgare	Bull Thistle	X		X			X
Cleome serrulata	Rocky Mountain Beeplant	X	X	X			X
Conium maculatum	Poison Hemlock				F	F	
Convolvulus arvensis	Field Bindweed	X	X	X			X
Conyza canadensis	Horseweed	X	X	X			X
Corydalis aurea	Golden Corydalis	X					
Croton texensis	Croton	X	X	X			X
Cucurbita foetidissima	Gourd	X		X	F	F	
Cyclachaena xanthifolia	Marsh Elder				F	F	
Dalea aurea	Prairie Clover	X					
Dalea candida	White Prairie Clover	X					
Dalea purpurea	Dalea	X					
Dalea spp.	Prairie Clover		X				
Descurania pinnata	Pinnate Tansy Mustard	X		X			X
Desmanthus illinoensis	Prairie Mimosa	X					
Dyssodia papposa	Fetid Marigold	X	X				X
Epilobium ciliatum (E. glandulosum)	Willowherb				F	F	
Equisetum hyemale	Smooth Scouringrush				F	F	
Erigeron bellidiastrum	Daisy	X	X				
Erigeron divergens	Spreading Fleabane	X	X	X			X

FORBS (cont.):							
Scientific Name	**Common Name**	**Shortgrass Prairie**	**Northern Sandhill Prairie**	**Greasewood Scrub**	**Wetlands**	**Riparian Woodland**	**Disturbed/ Landscaped**
Eriogonum annuum	Annual Eriogonum		X				
Eriogonum effusum	Soft Buckwheat		X				
Erysimum asperum	Western Wallflower	X					
Euphorbia spp.	Euphorbia	X	X				
Euphorbia dentata	Toothed Spurge	X					X
Evolulus nuttallianus	Evolulus	X					
Gaillardia pinnatifida	Blanket Flower	X					
Gaura coccinea	Scarlet Gaura	X	X				X
Gaura parviflora	Velvety Gaura				F	F	X
Grindelia squarrosa	Curlycup Gumweed	X	X	X			X
Haplopappus spinulosus	Cutleaf Ironplant	X		X			
Helianthus annuus	Common Sunflower	X	X	X			X
Helianthus petiolaris	Sunflower		X				
Heterotheca canescens	Hairy Aster	X	X				X
Heterotheca villosa	Golden Aster			X			
Hymenopappus filifolius	Hymenopappus	X	X				X
Ipomoea leptophylla	Bush Morning Glory	X	X				
Ipomopsis laxiflora	Gilia	X	X				
Lactuca serriola	Prickly Lettuce	X	X	X			X
Lactuca tatarica	Blue Lettuce	X					X
Lemna minor	Duckweed				O		
Lesquerella ludoviciana	Bladderpod	X					
Linum usitatissimum	Blue Flax						X
Lobelia cardinalis ssp. graminea	Cardinal Flower				Chico Creek Seep		
Lobelia siphilitica var. ludoviciana	Lobelia				Chico Creek Seep		

FORBS (cont.):							
Scientific Name	**Common Name**	**Shortgrass Prairie**	**Northern Sandhill Prairie**	**Greasewood Scrub**	**Wetlands**	**Riparian Woodland**	**Disturbed/ Landscaped**
Lygodesmia juncea	Skeletonweed	X	X	X			
Lythrum alatum	Loosestrife				Chico Creek Seep		
Machaeranthera canescens	Purple Aster	X		X			X
Machaeranthera pinnatifida	Yellow Aster	X	X				
Machaeranthera tanacetifolia	Purple Aster	X	X				
Medicago sativa	Alfalfa						X
Melilotus alba	White Sweetclover	X		X			X
Melilotus officinalis	Yellow Sweetclover	X					X
Mentha arvensis	Field Mint				F	F	X
Monarda fistulosa	Horse Mint				F	F	
Nuttallia nuda	Blazingstar	X	X				
Oenothera caespitosa	Evening Primrose	X	X				
Oenothera spp.	Evening Primrose	X	X				
Oenothera strigosa	Yellow Evening Primrose				F	F	
Oonopsis foliosa		X(sg 64)					
Oreocarya sp.		X	X				
Oxybaphus linearis	Narrowleaf Umbrellawort	X	X				
Palafoxia sphacelata			X				
Parthenocissus quinquefolia	Virginia Creeper				F	F	
Pectis angustifolia	Lemon Pectis	X	X				
Penstemon auriberbis	Beardtongue	X					
Persicaria lapathafolia (Polygonum lapathafolium)	Pale Smartweed				O		X
Phacelia hastata (P. leucophylla)	Scorpionweed	X					
Physalis hederifolia	Groundcherry				F		X
Physalis virginiana	Virginia Groundcherry			X	F		X

FORBS (cont.):							
Scientific Name	**Common Name**	**Shortgrass Prairie**	**Northern Sandhill Prairie**	**Greasewood Scrub**	**Wetlands**	**Riparian Woodland**	**Disturbed/ Landscaped**
Plantago patagonica	Woolly Plaintain	X	X				X
Polanisia jamesii	Clammyweed	X	X				X
Polygonum aviculare	Prostrate Knotweed	X					X
Portulaca halimoides			X				
Portulaca oleracea	Purslane	X					
Potomogeton nodosus	Longleaf Pondweed				O		
Psoralidium tenuiflorum (Psoralea tenuiflora)	Psoralea	X	X	X			
Ratibida columnifera	Prairie coneflower	X					
Ratibida tagetes	Coneflower	X					
Rumex crispus	Curly Dock	X			F	F	X
Ruinex venosus	Wild-begonia		X				
Salsola australis (S. iberica)	Russian Thistle	X		X			X
Scutellaria galericulata	Skullcap					F	
Senecio flaccidus ssp. Douglasii	Groundsel		X				
Senecio spartiodes	Groundsel						
Sisymbrium altissimum	Tumble Mustard	X	X	X			X
Sisymbrium officinale	Jim Hill Mustard	X		X			
Solanum physalifolium	Nightshade	X					X
Solanum rostratum	Buffalobur						X
Solidago canadensis	Canada Goldenrod				Chico Creek Seep		
Sonchus asper	Spiny Sowthistle	X					X
Sphaeralcea coccinea	Coppermallow	X	X	X			X
Suaeda spp.	Seablite			X			X
Talinum parviflorum		X		X			
Toxicodendron rydbergii	Poison Ivy				F	F	
Tradescantia occidentalis	Spiderwort	X					

FORBS (cont.):							
Scientific Name	**Common Name**	**Shortgrass Prairie**	**Northern Sandhill Prairie**	**Greasewood Scrub**	**Wetlands**	**Riparian Woodland**	**Disturbed/ Landscaped**
Tragopogon dubius	Salsify	X	X	X			X
Tribulus terrestris	Punctureveine						X
Trifolium spp.	Clover	X					
Typha angustifolia	Narrow-leaved Cattail				O		
Typha latifolia	Broad-leaved Cattail				O		
Unknown sp. 1				X			
Urtica gracilis (U. dioca)	Stinging Nettle				F	F	
Vaccaria pyramidata	Cowcockle				F	F	
Verbascum thapsus	Great Mullein	X			F	F	X
Verbena bracteata	Prostrate Vervain	X					X
Verbena hastata	Blue Vervain	X					X
Viola odorata	English Violet	X					
Xanthium strumarium	Cocklebur				F	F	X
Zinnia grandiflora	Zinnia	X					

F - Faculative

O - Obligate

X - Recorded as present in vegetation type

OBSERVED PLANTS AND THE VEGETATION TYPES/HABITATS WITH WHICH THEY ARE ASSOCIATED PUEBLO CHEMICAL DEPOT, PUEBLO, COLORADO

Original list compiled by Merino, additional species added by Renée Rondeau

SUCCULENTS AND CACTI:

Scientific Name	Common Name	Shortgrass Prairie	Northern Sandhill Prairie	Greasewood Scrub	Wetlands	Riparian Woodland	Disturbed/ Landscaped
Coryphantha vivipara	Nipple Cactus	X		X			
Cylindropuntia imbricata	Cholla	X	X	X			
Echinocereus viridiflorus	Hens and Chickens	X					
Opuntia humifusa?	Eastern Prickly Pear	X	X	X			
Opuntia macrorhiza	Prickly Pear	X					
Opuntia phaeacantha	New Mexican Prickly Pear	X					X
Opuntia polyacantha	Plains Prickly Pear	X	X	X			X
Yucca glauca	Yucca	X					X

X - Recorded as present in vegetation type

APPENDIX 4: Natural Resources Management Prescriptions/List of Projects 2021-2025

APPENDIX 4: Natural Resources Management Prescriptions/List of Projects

2021–2025

PROJECT TIME FRAME	PRIORITY	CLASS	PROJECTED COST	IMPLEMENTATION	RESPONSIBLE OFFICE
Provide direct support to DA and PCD in ensuring that the natural resources required to support the mission on PCD are present, functional, and self-sustaining to the extent practicable					
Integrate all natural resource data into a geodatabase	Medium	Maintenance		Ongoing	EMO + Contractor
Ensure compliance with applicable local, state and federal rules and regulations as they pertain to the natural resources under the stewardship of DA and PCD					
Pursue resource restoration when needed					
Restore wildlife management areas impacted by contaminant clean-up activities and the demolition of the structures built to facilitate that action	Medium	Enhancement	$0	Ongoing	EMO
Conduct a controlled, prescribed burning program	Low	Enhancement	$0	As needed	EMO, Fire Department
Employ any feasible methods of controlling or eradicating black bullheads from the AWS Pond that does not harm native species	Low	Enhancement	$0		EMO
Where feasible, control or eradicate non-native invasive species	High	Maintenance		Ongoing	EMO, Contractor
Demolish or seal up old structures to preclude access to pigeons	Medium	Enhancement	$0	Ongoing	EMO, Public Works
If feasible and approved, reintroduce black-footed ferrets at the primary prairie dog management area on PCD	High	Enhancement		Fall 2022	EMO

PROJECT TIME FRAME	PRIORITY	CLASS	PROJECTED COST	IMPLEMENTATION	RESPONSIBLE OFFICE
Employ ecosystem management principles and practices					
Maintain prairie dog towns on PCD to help sustain breeding pairs of Burrowing Owls on the installation	High	Maintenance	$0	Ongoing	EMO
Conduct black-tailed prairie dog translocations on the primary prairie dog management area to support short grass prairie restoration.	High	Maintenance	$0	Ongoing	EMO
Where fences are necessary or constructed on the depot, remove any wire lower than 18 inches for wildlife movement, and remove any fences that are not necessary for security or future livestock exclusion	High	Enhancement	$0	Ongoing	EMO, Public Works
Remove the several tangled masses of concertina wire that remain in the PCAPP area	High	Enhancement	$0	Ongoing	EMO, Public Works
Review proposed soil disturbing projects in areas wherein cryptobiotic soils are known to exist	Low	Maintenance	$0	Ongoing	EMO
Protect the unique and relatively healthy cottonwood stands along the heavily wooded part of lower Chico Creek	Medium	Maintenance	$0	Ongoing	EMO
Construction of new water catchments for the availability of water during periods of drought, and haul water to units that are empty	Medium	Enhancement	$0	Ongoing	EMO, Public Works
Promote a self-sustaining swift fox population on the depot	High	Enhancement	$0	Ongoing	EMO
Promote a self-sustaining mountain plover nesting population on the depot	High	Enhancement	$0	Ongoing	EMO
Maintain native habitats to enhance the sustainability of a viable population of the Colorado checkered whiptail	High	Enhancement	$0	Ongoing	EMO

PROJECT TIME FRAME	PRIORITY	CLASS	PROJECTED COST	IMPLEMENTATION	RESPONSIBLE OFFICE
Protect species and communities that are considered at risk of becoming extinct in any part of their ranges	High	Must Fund	$0	Ongoing	EMO
Ensure the future of functional natural ecological systems in perpetuity through developing, observing and enforcing rules and regulations as they apply to protection of resources					
Provide recreational opportunities, both nonconsumptive and consumptive, that reasonably can be sustained by the resources and that are practicable given the resources available					
Promote and support educational opportunities relative to the natural environment under PCD's management purview					
Promote and support research opportunities as they arise					
Annually conduct surveys (bats, burrowing owls, raptors, prairie dogs, swift fox, winter birds, southern red-belly dace, Arkansas darter, and eastern black rail) to support the natural resources stewardship mission at PCD.	High	Enhancement	$0	Annually	EMO
Participate in a continuing study of various wildlife species to determine their movement patterns across PCD.	Medium	Enhancement	$0	Ongoing	EMO
Participate in a continuing study of black-tailed prairie dog behavior pre- and post-translocation.	Medium	Enhancement	$0	Ongoing	EMO
Continue the existing relationship with Colorado State University-Pueblo biology department to provide research opportunities on PCD.	High	Enhancement	$0	Ongoing	EMO
Ensure lines of communication and coordination within the PCD community are maintained					
Establish and maintain open lines of communication with the private sector, including adjacent landowners and members of local communities					
Maintain open lines of communication with land owners and managers in the Chico Creek watershed upstream from PCD	High	Enhancement	$0	Ongoing	EMO
Seek input and expertise from nongovernmental organizations for the purpose of enhancing the natural resources program on the depot					

PROJECT TIME FRAME	PRIORITY	CLASS	PROJECTED COST	IMPLEMENTATION	RESPONSIBLE OFFICE
Promote Chico Basin, in its entirety, to become a Colorado Important Bird Area	Medium	Enhancement	$0		EMO + volunteers
Exchange information with local, state, and other federal agencies					
Conduct annual breeding bird monitoring in cooperation with the Rocky Mountain Bird Observatory	High	Enhancement	$0	Annually	EMO

APPENDIX 5: Results of the 2000 PCD Planning Level Surveys

Refer to PDFs Volume I and II in PCD EMO office

APPENDIX 6: Migratory Bird Management

Conservation actions for migratory bird management are identified in section 4.e: Migratory Bird Management.

A Memorandum of Understanding between the U.S. Department of Defense and the U.S. Fish and Wildlife Service was signed initially in 2006. This MOU is pursuant to Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* (66 FR 3853 [January 17, 2001]) and identifies activities where cooperation between the DoD and USFWS will contribute to the conservation of migratory birds. The MOU was updated and the new version was signed in September 2014, and is set to expire in September 2019. The updated MOU is available to the public at either organization's website.

In December 2017, the Office of the Solicitor of the United States Department of the Interior issued Solicitor's Opinion M-37050, The Migratory Bird Treaty Act Does Not Prohibit Incidental Take, which states that the MBTA prohibition on "take" only applies to deliberate acts intended to take a migratory bird, their nests, or their eggs. A follow-up memorandum from the Deputy Assistant Secretary of Defense (Environment, Safety and Occupational Health), titled Incidental Take of Migratory Birds (6 February 2018; see document below), clarified that this opinion does not rescind the "military readiness rule" (50 CFR 21.15), Executive Order 13186, or the MOU with the U.S. Fish and Wildlife Service. This memorandum advised that the Military should continue to follow existing DoD guidance to minimize the incidental take of migratory birds.

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ENERGY, INSTALLATIONS, AND ENVIRONMENT

FEB 06 2018

MEMORANDUM FOR DEPUTY ASSISTANT SECRETARY OF THE ARMY
(ENVIRONMENT, SAFETY AND OCCUPATIONAL HEALTH)
DEPUTY ASSISTANT SECRETARY OF THE NAVY
(ENVIRONMENT)
DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE
(ENVIRONMENT, SAFETY AND INFRASTRUCTURE)
DIRECTOR, DEFENSE LOGISTICS AGENCY (DSS-E)

SUBJECT: Incidental Take of Migratory Birds

On December 22, 2017, the U.S. Department of the Interior's Office of the Solicitor issued Solicitor's Opinion M-37050 issued the opinion that the Migratory Bird Treaty Act (MBTA) prohibition on the "taking" or "killing" of migratory birds applies only to deliberate acts intended to take a migratory birds, their nests, or their eggs. This opinion permanently withdraws and replaces Solicitor's Opinion M-37041 (issued January 10, 2017, and suspended pending review on February 6, 2017).

This opinion alone does not rescind the "military readiness rule" (50 C.F.R. §21.15), §315 of the Bob Stump National Defense Authorization Act for Fiscal Year 2003, Executive Order 13186, or the resulting MOU with U.S. Fish and Wildlife Service. Neither does it address the split of opinions among the five Circuit Courts of Appeal that have addressed the question of whether the MBTA criminalizes some instances of incidental take, an issue that can be resolved only by U.S. Supreme Court review or congressional action. As a consequence, we advise that until further clarification is provided, the Military Departments 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.

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Maureen Sullivan
Deputy Assistant Secretary of Defense
(Environment, Safety and Occupational Health)

Attachment:
None

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