

Chapter 2—Alternatives



Cindy Souders / USFWS

A Service employee controls weeds with a chemical treatment.

Our job is to sharpen our tools and make them cut the right way...

Aldo Leopold, The River of the Mother of God and Other Essays

In this chapter we describe the management alternatives that we propose for the Rocky Mountain Arsenal National Wildlife Refuge. Alternatives are different approaches to management that are designed to achieve the purposes of the refuge, promote the vision and goals of the refuge, and further the Refuge System’s mission. We have formulated four alternatives, including the no-action alternative, to address significant issues that have been identified by the Service, cooperating agencies, interested groups, and the public during the public scoping period and throughout development of the draft plan, and to meet the goals developed through that process. The “Summary” lists the vision and goals we have developed for the refuge; chapter 1 provides an overview of the issues addressed in this EIS.

2.1 Criteria for Alternatives Development

Following the initial public scoping process during spring and summer 2013, we held meetings and workshops with the cooperating agencies and identified a range of preliminary alternatives. Eventually, we dropped some of these ideas; we discuss those in section 2.9. We selected the following four alternatives for detailed discussion and analysis in this EIS:

- Alternative A—No-Action Alternative
- Alternative B—Traditional Refuge Alternative
- Alternative C—Urban Refuge Alternative (Service’s Preferred Alternative)
- Alternative D—Gateway Refuge Alternative

In concert with existing refuge plans, these alternatives examine different ways in which we can achieve the goals and address significant issues; provide opportunities for the public to engage in compatible, wildlife-dependent recreation; improve

transportation within and access to the refuge; increase outreach and partnerships; and reintroduce native species to the refuge. Each alternative incorporates specific actions that are intended to achieve the goals described in the Summary (table S-1). The no-action alternative would continue the current refuge management strategies and may not meet every aspect of every goal. The no-action alternative provides a basis for comparison with action alternatives B, C, and D. The alternatives vary in how well they meet each goal, as discussed in section 2.13.

2.2 Elements Common to All Alternatives

Regardless of the alternative selected, we will comply with all applicable laws, regulations, and policies for management activities that could affect refuge resources such as soil, water, air, threatened and endangered species, and archaeological and historical sites. A list of key legislation and policies is presented in appendix A.

The elements listed below and the sections that follow describe practices and policies that guide refuge management as well as actions that have been approved in other plans and are currently in force. These practices and policies apply to all alternatives, including the no-action alternative.

- We will identify and protect significant cultural resources. Individual projects may require consultation with the Colorado State Historic Preservation Office, tribal historic preservation offices, and other interested parties.
- U.S. Army–retained sites and facilities will continue to be inaccessible to the public.
- As the refuge’s budget and personnel duties allow, we will continue to implement the refuge’s approved and current HMP and Black-Tailed Prairie Dog Management Plan.
- Collaboration with our partner agencies or organizations will continue under established agreements. Cooperation and collaboration with Federal, State, tribal, and local governments; nongovernmental organizations; and adjacent private landowners will continue. Section 3.5 describes existing and potential partnerships.
- All wildfires occurring on the refuge will be managed under a full suppression strategy—accordingly, the potential benefits of naturally occurring wildfires will not be considered in pursuing this suppression strategy.
- Prescribed burns will be conducted in all habitat types on the refuge, and we will carry out all prescribed fire activities under our approved and current FMP, which conforms to DOI and Service policies. While the amount of prescribed burning will vary from year to year based on management objectives and fire conditions (for example, weather and fuel moisture), the refuge will continue to burn up to about 2,500 acres per year.
- In accordance with our approved and current IPMP, we will continue to control invasive weeds and carry out integrated pest management (IPM) using a variety of tools such as grazing and biological, chemical, and mechanical controls. We will continue to work in partnership with others to reduce weed infestations.
- By law and policy, we will continue to abide by all State water regulations regarding the use of surface and groundwater. It is important to note that the use of all water sources on this refuge is subject to the adjudication process of the Colorado Water Court. The resulting court decrees often define when, where, and for what beneficial use water can be diverted, used, and consumed. All changes in water use described in this plan must either be within the limits described in the existing decree for the specific water source or result from a successful application to and approval by the State engineer or the court.
- We will continue to acquire land within the authorized boundary areas of the refuge. These lands will be purchased from willing sellers as funding becomes available.
- We will continue to manage the refuge’s fisheries in accordance with Service policy. All persons engaging in fishing activities will be required to possess a valid State-issued fishing license and to carry with them a refuge fishing permit while fishing. Fishing will be allowed only in designated fishing areas as posted and shown on maps.



Fishing will be allowed under all alternatives.

- The public will be required to park in designated parking areas and must abide by all other refuge-specific regulations.
- We will adhere to all Service polices regarding rules and regulations for oil, gas, and mineral extraction on refuge lands. Access to subsurface minerals is regulated by Federal and State laws, which, in part, require the Service, as owner of the surface estate, to place reasonable restrictions on the mineral access in order to reduce disturbance to the surface estate.

Sustainability

Sustainability is a guiding principle of the CCP effort. The Service has set a goal for becoming carbon neutral by 2020 through avoiding emitting greenhouse gases, reducing unavoidable emissions, and offsetting any remaining emissions. This region's climate is conducive to the increased use of solar energy as a cost-effective and reliable form of alternative energy. The refuge's Visitor Center—which will be LEED certified in the near future—currently uses both geothermal and solar energy to reduce and offset its energy consumption while incorporating a variety of design techniques to increase energy efficiency. In addition, we use solar energy to power most of our electric wells, and we will continue to retrofit and improve our existing facilities.

By 2018, we anticipate installing new, wildlife-friendly photovoltaic solar arrays to support the refuge's maintenance facilities. If constructed, these solar arrays would occupy already disturbed sites within the refuge's administration area. These

arrays might occupy approximately 1–2 acres of previously disturbed lands and will require some minor trenching.

We will also construct a new, more efficient administration office building and improve several other existing facilities that will receive a portion of their electricity from new solar generating systems. The Service recently issued a new Climate Leadership in Refuge (CLIR) tool that we will use to gauge greenhouse gas emissions and to comprehensively assess, and over time reduce, the carbon footprints of operations and of our visitors.

U.S. Army's Dams

Lands associated with four interconnected reservoirs and associated dams in the Irondale Gulch drainage on the refuge have already been transferred to Service ownership, but the responsibility of operation and maintenance of the dams was retained by the U.S. Army pending inspection and repair. These reservoirs are an important part of the refuge for both people and wildlife. Following floods in September 2013, the U.S. Army Corps of Engineers (USACE) completed an updated dam safety report (USACE 2014) on all four dams. This report makes several recommendations that must be completed prior to transfer of these dams to the Service. The U.S. Army is currently working to schedule needed repairs and improvements. Once these are completed, the Service plans to accept transfer of the dams as a part of refuge operation.

Fees

The refuge does not have an entrance fee nor will an entrance fee be considered in this plan. However, under the Federal Lands Recreation Enhancement Act, the refuge may charge reasonable fees for some of its programs. Fees are used to support programs and help pay for facility maintenance, brochures, passes, and fee envelopes. The refuge currently charges the following fees:

- Recreational Fee:
 - Daily Fishing—\$3 per day for persons 16 years and older
- Non-Recreational Fees:
 - Facility Fee—\$50 per day as a deposit for using refuge facilities, to be returned if there is no damage or need for unreasonable cleaning

- Commercial Photography—\$50 dollars per day—a limited number of permits

After conducting a fee analysis, we are proposing the fees listed below based on what similar nearby facilities charge. In addition to daily fishing permits, we intend to offer an annual fishing pass to assist frequent users and reduce paperwork. In the future, we may also offer our facilities to outside organizations for wildlife-dependent presentations, training, and other functions. Due to the popularity of our facilities, we need some assistance in defraying costs and any additional staff time necessary to support events (such as after-hours, holiday, and weekend events). The following fee structure is common to all alternatives and would become effective January 1, 2016:

- Recreational Fees:
 - Daily Fishing (unchanged)—\$3 per day for persons 16 years and older
 - Annual Fishing (new)—\$50 per year for persons 16 years and older
- Non-Recreational Fees:
 - Facility Fee (new)—\$50 per day plus any additional staff time for use of refuge facilities (such as commercial summer camp and fee-based programs)
 - Commercial Photography (changed)—\$100 dollars per day

Alternatives B and C include new hunting opportunities. Fees would be assigned to these programs to assist with the cost of management. Fees for the programs would be developed as part of a future Hunt Management Plan.

Federal Duck Stamps and Federal Lands Recreation Passes

We will begin to sell Migratory Bird Hunting and Conservation Stamps (Federal Duck Stamp and Junior Duck Stamp) and continue to issue Federal Lands Recreation Passes. The cost of both Federal duck stamps and the various Federal Lands Recreation Passes are determined nationally.

Surrogate Species

The principal purpose of a national wildlife refuge is to conserve fish and wildlife and their habitats. We are entrusted by the American people with conserv-

ing and protecting these resources; this commitment involves prioritizing certain trust resources on our refuges. Trust resources—wildlife and habitat for the conservation of which the Service has statutory responsibility—typically refers to federally listed threatened or endangered species, migratory birds, certain marine mammals and fish, and wetlands. The Service issued draft policy (FWS 2013a) focusing our attention on the following conservation priorities:

- recovery of threatened and endangered species
- implementing the North American Waterfowl Management Plan
- conserving migratory birds of conservation concern

As detailed in the refuge HMP (FWS 2013a), restoration and maintenance of habitat are central to accomplishing our mission. The presence and health of wildlife populations are key indicators in measuring the success of these efforts. However, more than 350 wildlife species have been documented on the refuge. With such a broad suite of species, habitat conditions (such as food, cover, and other life history requirements) that provide the needs of all these species individually cannot be managed consistently and reliably (FWS 2013a). Consequently, in 2006 the Service endorsed SHC as its new adaptive management business model. SHC recognizes that future conservation of fish and wildlife species must utilize new tools that function at broader scales, embracing landscape-level approaches. The key to this model is the designation of priority species as a guide for conservation design (National Ecological Assessment Team 2006). The selection of priority species is a valuable tool to assist in the development of conservation efforts.

The Service has further refined its SHC approach to focus conservation design on creating functional landscapes capable of supporting self-sustaining populations of fish and wildlife species (FWS 2012a). This approach is based on the selection of surrogate species, which Caro (2010) defined as “species that are used to represent other species or aspects of the environment.” This guidance is still under development, but shows promise for a systematic approach to landscape-level conservation design that would address the essential limiting factors of certain species—in other words, using the surrogate species to help identify and nurture the habitat conditions necessary to preserve other sensitive species that would benefit from the same habitat conditions, thereby supporting biodiversity overall.

For the purposes of this EIS, we will use a limited number of species to inform our goals, objectives, and future management of the refuge. We have chosen

four species as surrogates—lark bunting, Cassin’s sparrow, black-tailed prairie dog, and American bison—that are consistent with our focus on threatened and endangered species, declining populations of migratory birds, and the genetic conservation of bison. We believe these four species represent the majority of our habitats (shortgrass and mixed-prairie with a shrubland component) and will serve as good indicators for the application of adaptive management. If we successfully manage for these species, their ecosystems should respond favorably as well.

While the refuge supports other important habitat types (lacustrine, riparian, wetlands, and woodlands), their role on the refuge does not directly relate to national or regional biological goals, and so surrogate species have not been selected for these habitat types.

Lark Bunting

The lark bunting is the selected surrogate for the mosaic of shortgrass and mixed-grass prairie. The lark bunting is associated with Swainson’s hawk, western meadowlark, mountain plover, long-billed curlew, short-eared owl, horned lark, and ferruginous hawk. We plan to restore up to 4,500 acres of native shortgrass prairie, providing suitable nesting habitat for the lark bunting and associated species.

Cassin’s Sparrow

The Cassin’s sparrow is the selected surrogate for mixed-grass prairie and shrubland (which includes sand sagebrush, yucca, and rabbitbrush). The Cassin’s sparrow is associated with loggerhead shrike, western meadowlark, grasshopper sparrow, Swainson’s hawk, short-eared owl, and vesper sparrow. We plan to restore and establish up to 8,000 acres of mixed-grass prairie, providing suitable nesting habitat for the Cassin’s sparrow and associated species.

Black-Tailed Prairie Dog

The black-tailed prairie dog is the selected surrogate for a native vegetation community that not only supports prairie dogs, but also associated species such as burrowing owl, black-footed ferret, prairie rattlesnake, American bison, and many other species that reside on the refuge. We plan to manage a minimum of 2,585 acres (17 percent) of the refuge for prairie dogs.

American Bison

The American bison is the selected surrogate for shortgrass prairie and will be the primary habitat maintenance tool. The bison is associated with prairie

dog, burrowing owl, and ferruginous hawks. A second goal of the refuge bison herd will be to serve as a genetic reservoir to lessen the chance of inbreeding depression and reduce the risks of disease and genetic drift. As of July 2014, our herd numbered 80 animals, exceeding the carrying capacity for current pastures. An additional pasture unit was developed in 2014 and, as more infrastructure is constructed, approximately 12,165 acres will eventually be available for bison grazing.

2.3 Structure of Alternative Descriptions

Since each alternative is designed to address the goals described in table S-1, the description of each alternative is organized by goal:

- Habitat Management
- Wildlife Management
- Visitor Services
- Communications and Outreach
- Partnerships
- Cultural Resources
- Research and Science
- Infrastructure and Operations
- Access and Transportation

2.4 Summary of Alternative A—No Action

Alternative A, the no-action alternative, represents current management of the refuge (figure 7). This alternative provides the baseline against which the other alternatives are compared. It also fulfills the NEPA requirement that a no-action alternative be addressed in an EIS.

Under this alternative, management activities currently conducted by the Service will remain in effect as described in section 2.2 and below. We would not develop any new management, restoration, or education programs. Current habitat and wildlife practices would not be expanded or changed except as allowed by existing approved plans such as those described in section 1.8. Funding and staff levels would remain the same with little change in overall trends. Programs would follow the same direction, emphasis, and intensity as they do now.

The following is a synopsis of the major management actions called for in the HMP that we would continue to implement under all four alternatives.

Habitat Management

Under this alternative, we would continue to use an adaptive management framework to conserve, restore, and enhance the ecological integrity of the Front Range prairie communities, including the wetlands, trees, and native shrubs within those communities. We would use prescribed fire, mowing, grazing, and IPM to restore and then maintain refuge habitats.

We would manage for habitat diversity in fire-maintained ecosystems using management tools like prescribed fire, as described in the fire management plan (FWS 2013i).

Invasive species management would continue through the use of approved biological controls, physical controls, chemical controls, and appropriate cultural controls for the prevention, early detection, monitoring, and control (or eradication) of invasive plant species and other pests on the refuge (FWS 2014d).

Herbivore populations would continue to be managed as necessary to ensure the long-term sustainability of restored prairie and shrubland, contribute to the Service's bison metapopulation goals, and provide suitable habitat for species of concern.

Also, we would pursue a variety of strategies aimed at protecting wildlife habitat (such as fee-title acquisition, leases, and co-management of private lands).

Prairie

We would continue to pursue the goals specified in the 1999 habitat restoration plan and the HMP for restoring native prairie to develop diverse plant community mosaics that differ in composition, height, and density. These activities would promote successful long-term establishment and maintenance of seeded restoration sites, as well as existing native prairies and shrublands, to provide habitat for species of concern. We would continue to work with DIA and adjacent cities on co-management of specific parcels of wildlife habitat (such as the bison viewing area) and to acquire and protect inholdings and lands adjacent to the existing refuge boundary.

Shrubland

Shrubland would be maintained and restored where appropriate to provide suitable nesting habitat

for Cassin's sparrow as well as forage and shelter for associated small mammals and deer.

Wetlands

Wetlands would continue to be managed to promote native emergent species, provide opportunistic benefits to wetland-dependent wildlife, and maintain spawning grounds for forage fish. Cattails would be treated when 80 percent or more of shorelines are covered with them within 30 feet of the shoreline.

Riparian Areas

Riparian corridors would be sustained. Surface flow would remain unaltered without actively managing hydrology. We would inventory this habitat.

Wildlife Management

We would maintain healthy wildlife communities in harmony with the refuge's historic cultural landscape—which includes New Mexico locust thickets, old farmstead windbreaks, and other planted trees—as well as with cottonwood galleries, created wetlands and lakes, and restored grasslands.

We would restore habitat for species of concern (such as grassland-dependent birds, burrowing owls, bald eagles, neotropical migratory birds, bats, and black-footed ferrets) using tools such as prescribed fire. We would continue to provide nesting sites for burrowing owls along with long-term quality nesting and roosting habitat for bald eagles. We would provide habitat in the refuge's Environmental Education Zone for neotropical migratory bird species that are losing suitable stop-over areas to urban development in the Denver Metropolitan area. We would implement riparian and prairie habitat recommendations from the HMP addendum to maintain a mosaic of wetland and riparian habitats to provide foraging habitat in support of big brown bat populations. We would discontinue the use of artificial bat roosts, also known as bat boxes.

Black-Footed Ferret

Federally listed black-footed ferrets would not be reintroduced to the refuge.

Surrogate Species

A population of black-tailed prairie dogs (FWS 2013h) would be preserved. This provides functions necessary to perpetuate native grasslands and support associated migratory birds (FWS 2013a).

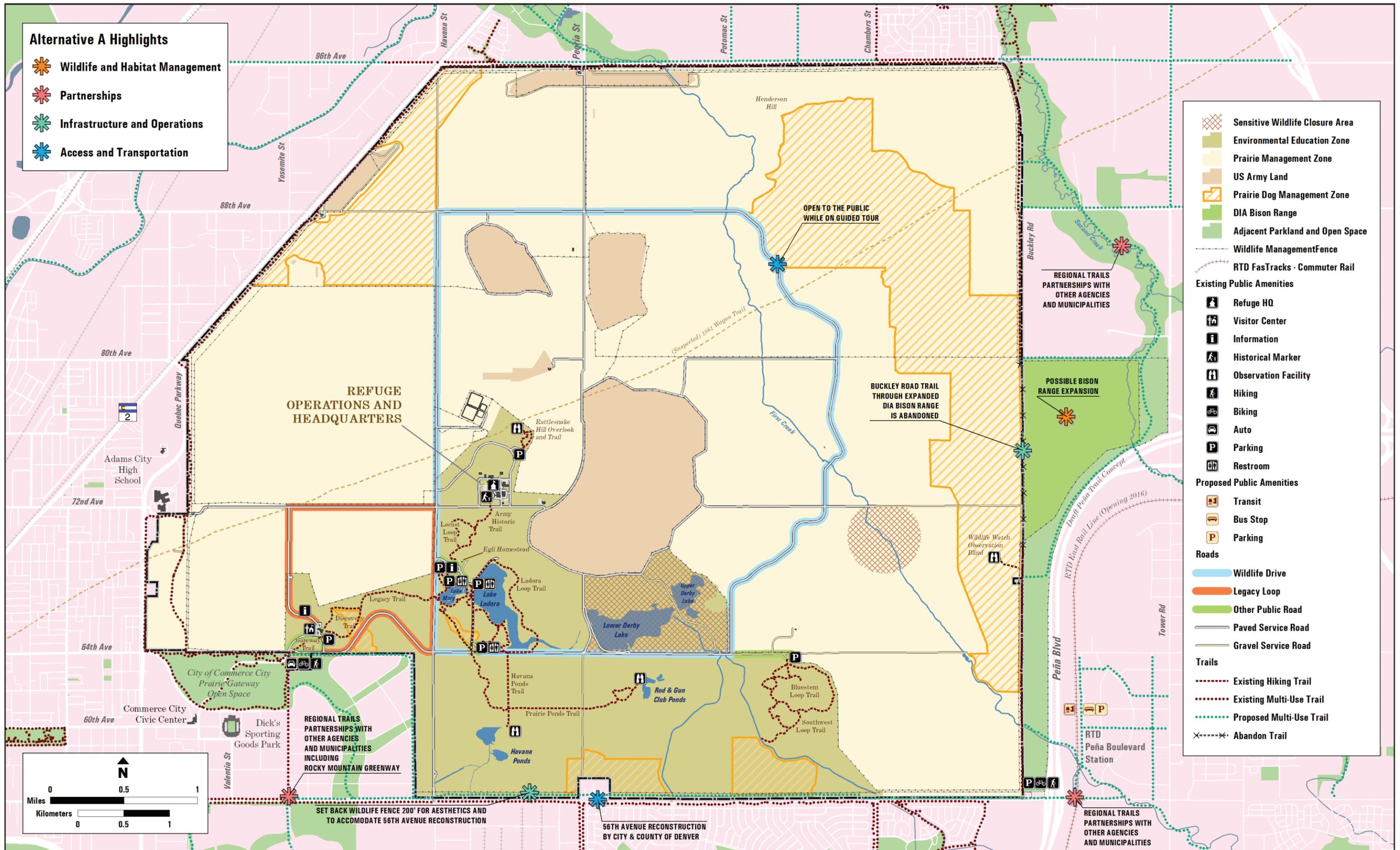


Figure 7. Principal features of alternative A.

We would continue to maintain a bison population that contributes to DOI's Bison Conservation Initiative and helps maintain the structure and composition of native and restored prairies necessary to support priority grassland bird species. Bison populations would be managed at or below the refuge's carrying capacity. The 80 bison currently making up the refuge herd exceed the present carrying capacity. Once additional grazing units are in place, long-term bison populations may range between 110 and 180 and should not exceed 209 individuals.

Other Native Species

No reintroduction of other native species (e.g., greater prairie chicken, sharp-tailed grouse, pronghorn) would be undertaken.

Visitor Services

Under this alternative we would maintain existing facilities and programs.

Hunting

The refuge would remain closed to all hunting and hunting-related activities (such as hunter education).

Fishing

The refuge would continue to be open for catch-and-release fishing from April to October in accordance with State fishing regulations.

Wildlife Observation and Photography

Wildlife observation and photography opportunities would continue to be provided on the refuge, supported by a self-guided auto tour, nature trails, and a wildlife viewing blind near the Rod and Gun Club Pond. Seasonal closures to protect sensitive wildlife areas and reduce disturbance to wildlife would be supported. A limited number of commercial photography permits are available each year; we would continue to evaluate requests for these permits on a case-by-case basis.

Environmental Education and Interpretation

The environmental education program would continue to be opportunistic, depending on the availability of time and staff. An environmental education curriculum is available to teachers, although a limited

number of environmental education programs are offered due to our current staff shortage. The refuge has an active interpretation program and offers regular tours and programs. Interpretive panels, brochures, factsheets, Web sites, and maps would be updated as funding allows. We would continue to make use of the Contact Station to provide interpretive programs as well as to provide a venue for teachers to use our environmental education curriculum.

Communications and Outreach

Audiences

With the help of refuge volunteers, we would continue to reach out to traditional refuge visitors and local communities by participating in community outreach events such as Fishing Frenzy, Refuge Day, the Bass Pro Fishing Classic, Colorado Get Outdoors Day, the Aurora Youth Water Festival, the Barr Lake Birding Festival, and other events.

Emphasis of Outreach Message

We would continue to support the Service's Urban Wildlife Conservation Program and to participate in special events and career development programs for local students.

Tools and Approaches

We would continue to manage Web site and social media platforms to reach a broad spectrum of visitors. The Wild News publication, a quarterly list of refuge tours and nature and interpretation programs, would continue to be distributed through an extensive email list; it is also available in hardcopy format in the Visitor Center and locations throughout local communities. The refuge has a current general brochure and rack card, and staff is developing brochures for trails and the auto tour.

Partnerships

Through partnerships with other organizations and municipalities (including those in the Rocky Mountain Greenway Trail Network and Sand Creek Greenway Partnerships), we would continue to create new trails and connect them with existing trails to form a trail network connecting the refuge with Two Ponds NWR and Rocky Flats NWR. Friends of Front Range Wildlife Refuges would continue to sup-

port refuge programs and operate the Visitor Center store—Nature’s Nest Books and Gifts. Partnerships with City of Commerce City Parks and Recreation and Bass Pro Shops to sponsor the annual Fishing Frenzy would continue. We would continue to work with the City and County of Denver and the Rocky Mountain Bird Observatory to implement the Urban Bird Treaty. We would continue to implement the Urban Refuge Partnership with Environmental Learning for Kids at their property in Montbello. We would continue to develop our partnerships with the Denver Botanical Garden and Butterfly Pavilion for monarch and pollinator programs and outreach. We would continue to work with Mile High Youth Corps and Groundwork Denver for habitat restoration projects. The refuge would continue to employ Arrupe High School students—one student once a week—to assist with operation of the Visitor Center through an agreement managed by our regional diversity and civil rights office.

Cultural Resources

Under Section 106 of the National Historic Preservation Act (NHPA), we would continue to conduct cultural resource reviews for projects that involve ground-disturbing activities or that could affect buildings or structures more than 50 years old. Most of the refuge was intensively surveyed for cultural resources in 1994 and 1995, and the results of those surveys form an excellent basis for these reviews (Clark 1997).

We would avoid disturbing significant cultural resources unless such disturbance is necessitated by unusual circumstances. In addition, we would continue to conduct law enforcement patrols to monitor sensitive sites. We would continue to consult with the Colorado State Historic Preservation Office, Native American tribes, local governments, and members of the general public on matters pertaining to cultural resources. We would continue to adhere to other cultural resource laws; however, research opportunities would be minimal.

Artifacts currently stored at the refuge—both prehistoric and historic items—would be cared for and inventoried. We would explore and possibly implement deaccession of some artifacts.

Significant historic buildings, structures, and sites would be preserved and interpreted using signage and bus tours. The Egli House and garage, listed in the State Register of Historic Properties, would continue to be preserved through some stabilization actions and maintained in a state of arrested decay. This house and other historic sites—including the observation bunker, the old Officer’s Club, the guard tower foundation, the weapons storage bunker,

homestead sites, a wagon road, historical tree plantings, and farming equipment—would continue to be protected. (See following page for more details on the Egli farmstead.)

Research and Science

We are currently engaged in several research and monitoring programs; these will continue. Some projects support both research and monitoring and inventory programs. All this work is helpful for making management decisions.

Research

Trapping and banding burrowing owls contributes to research on the migratory pathways of burrowing owls in western North America. Other research opportunities arise, often unexpectedly and involving short-term levels of effort.

Monitoring and Inventory Programs

We would continue to conduct the following annual monitoring and inventory programs:

- Trap and band burrowing owls as a monitoring project (as well as for research) that may help evaluate trends in the migratory pathways of burrowing owls in western North America.
- Conduct bald eagle winter roost surveys and nest counts in cooperation with the Rocky Mountain Bird Observatory to help monitor overall riparian health of the refuge and bald eagle reproductive success at the refuge.
- Monitor raptor nests (such as those of Swainson’s hawks and burrowing owls) in accordance with objectives in the HMP.
- Assess fish populations through electrofishing and gillnetting in accordance with objectives in the HMP to maintain a quality sport fishery.
- Conduct a deer census each fall to assess populations for inclusion into the refuge for-age allocation plan.
- Conduct a bison roundup each fall to assess overall individual health and to evaluate populations for inclusion into the refuge for-age allocation plan.

EGLI FARMSTEAD

Shortly after the arrival of the railroad, homesteading and other forms of new settlement began on and around the refuge. Settlement patterns changed over time as land was subdivided. Many of the new residents were recent immigrants from overseas. By the late 1930s, several hundred families were living within the boundaries of what would become the refuge (Hoffecker 2001).



Undated photo of Egli family members in front of their home.

Gottlieb Egli was born in Switzerland. He and his family came to the area after 1910 and acquired a relatively large plot of several hundred acres. They built a home and farmed corn, alfalfa, wheat, barley, and millet, as well as pigs and cattle. With the creation of the Rocky Mountain Arsenal, the Federal government acquired the land through condemnation, and the hundreds of families on the property were forced to abandon their homes. By all accounts, most did so without protest, but the pain of the experience was never forgotten (Hoffecker 2001).

The Egli house and garage, near the refuge's Contact Station, are the only surviving pre-World War II structures on the refuge. The house and garage are now listed in the Colorado State Register of Historic Properties, and these structures were determined as potentially eligible for listing in the National Historic Register of Historic Places as representative of twentieth century agriculture in northeast Colorado.

A structural assessment of the buildings was completed in 2004, but little preservation has been carried out since (Preservation Partnership 2004). In 2014, the Friends of Front Range Wildlife Refuges replaced the roof and gutters and repaired the chimney and windows on the second floor.

We considered a range of alternatives for the Egli farmstead, all of which satisfy our requirements under the National Historic Preservation Act.

- *Alternative A*—we would continue to preserve the Egli House in a state of “arrested decay” and would interpret it in its current, deteriorated condition.
- *Alternative B*—we would preserve and interpret the Egli farmstead in the same way as we would under Alternative A.
- *Alternative C (preferred alternative)*—we would strive to complete partial restoration of the interior and full restoration of the exterior of the Egli farmstead. We would install additional interpretive panels outside the house to explain the significance of the farmstead and past homesteading on the refuge.
- *Alternative D*—we would strive to complete a full restoration of both the interior and exterior of the Egli property to allow for reuse. While we have not identified specific future uses, they could include a variety of interpretational activities.

- Monitor native and invasive vegetation—especially at habitat restoration sites—to determine future management actions that may be necessary.
- Band 200 mourning doves to support national efforts to monitor migratory birds.
- Support Citizen Science projects in connection with the Great Backyard Bird Count in February.
- Conduct a Christmas Bird Count in January to support national efforts to monitor migratory birds.
- Conduct spring and fall bird counts in May and September to support national efforts to monitor migratory birds.

Citizen Science Projects at the Refuge

We will continue to support Citizen Science projects, especially the Christmas Bird Count in January, the Great Backyard Bird Count each February, and spring and fall bird counts in May and September.

Climate Change

We do not conduct research on climate change. However, refuge and U.S. Army personnel do collect meteorological data that may be useful in the future for establishing trends in climate change at the refuge.

Social Science, Social Media, and Emerging Technologies

We do not currently conduct research in social science, social media, or emerging technologies. However, we do occasionally permit social science research that benefits refuge management.

Infrastructure and Operations

Staff and Funding

Tables 7 and 8 in section 2.11 provide information on the refuge's current funding and personnel, which would continue unchanged.

Volunteer Groups and Programs

At present, approximately 80 volunteers actively support refuge operations, including staffing the front desk of the Visitor Center, conducting interpretive tours and programs, performing light maintenance of trails and facilities, assisting with biological surveys, and staffing special events. A fenced pollinator garden behind the Visitor Center is maintained by volunteers and is in good condition. We would encourage the continuation of this project.

Facilities

Our visitor facilities include a Visitor Center, a Contact Station, three information kiosks, two amphitheaters, a fee station (iron ranger), and a wildlife viewing blind. A fenced pollinator garden and amphitheater are located behind the Visitor Center, with a second amphitheater at Lake Mary. No new facilities for observing and photographing wildlife would be developed, but existing facilities would be supported. A new administration building is planned and may be constructed. The Visitor Center includes an exhibit hall, a 73-seat auditorium, and discovery room. The Contact Station offers self-guided learning stations and can accommodate 60 students.

We would continue to host special events and meetings that support the purposes of the refuge and the mission of the Service and the Refuge System. We would consider hosting special events and meetings for DOI and other Federal, State, and local agencies on a case-by-case basis.

Under this alternative we would continue to safeguard the refuge from unnatural sounds and undue light contamination to the extent possible, but would not be able to retrofit existing structures to pursue this objective.



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The refuge's Visitor Center houses several exhibits.

Energy Transmission Towers

In support of the Service’s climate change policy, we implement all necessary measures to increase our facilities’ energy efficiency and reduce the carbon footprint of our refuge management operations. Additionally, we intend to modify the energy distribution lines (by either burying or relocating them) when redeveloping certain areas of the refuge. If necessary, we will coordinate with the U.S. Army prior to removal of the existing electrical substation on the refuge.

Refuge Signs

Entrance signs are located at the main and Havana gates. Guide and directional signs are posted throughout the refuge. Interpretive panels are located at the Visitor Center, Contact Station, and Wildlife Drive information kiosks. All signs would be maintained.

Water-Control Infrastructure and Water Rights

There are five major dams on the refuge. Upper Derby Lake, Lower Derby Lake, Lake Ladora, and Lake Mary dams are currently owned and operated by the U.S. Army and are slated for transfer to the Service (as noted in section 2.2). Havana Ponds dam is owned and operated by the City of Denver and Urban Drainage and Flood Control District (UDFCD). The refuge will not accept transfer of the U.S. Army dams until the necessary repairs on Lower Derby Lake, Lake Ladora, and Lake Mary dams are complete. Upper Derby Lake dam would be partially breached prior to transfer and would no longer be considered a dam. Havana Pond dam is currently impaired or breached after flooding in 2013, but it is currently being repaired.

Fencing

There would be no changes to the refuge’s existing fencing, sign design, and material standards.

Hours of Operation

The refuge would continue to be open from sunrise to sunset. In general, visitors would not be allowed in the refuge during hours of darkness.

Other Operational Topics

The UDFCD would include the refuge in an alert system (text alerts) to notify of emergency water con-

ditions, such as flood threats. We would partner with FHWA and others to investigate the vulnerability of refuge infrastructure to extreme weather events.

Access and Transportation

Points and Types of Access

Currently, automobile, bus, and pedestrian travel are the modes allowed on the refuge. These would continue to be available year-round, unless the refuge is closed due to heavy snows. Recreational biking would continue to be permitted from the main gate—the Prairie Gateway—to the Visitor Center, but all other trails and roads would remain closed to this use. The single existing visitor access point would remain in effect.

Way-Finding and Sign Plan

The refuge would continue to use existing way-finding signs and would not develop a sign plan within the life of the CCP.

Roads and Related Infrastructure

The infrastructure and the type and condition of the existing roads would remain unchanged from the predominantly older asphalt roads left behind by Army operations. The roads would only receive the maintenance necessary to sustain current operations.

Legacy Loop

The Legacy Loop tour route would remain open to the public when the refuge is open.

Wildlife Drive

Under this alternative, the Wildlife Drive auto tour route would generally remain closed to the public, except for tours guided by refuge personnel.

Trail System

The Service would continue to maintain 10 miles of trails in the refuge. Sections of some trails that are currently closed due to flood damage would be repaired. The refuge would remain open to snowshoeing on existing trails.

2.5 Summary of Alternative B—Traditional Refuge

This alternative focuses on providing traditional refuge visitor uses and conveying the importance of conservation, wildlife protection, and the purposes of the Refuge System (figure 8). Access to the refuge would remain more limited than under alternatives C and D, and wildlife-dependent recreation, as well as community outreach, would be minimally expanded.

Habitat Management

Habitat management under this alternative would be similar to that under alternative A.

Wildlife Management

We would manage wildlife much as we would under alternative A, with the exception that we would seek to reintroduce the endangered black-footed ferret and, possibly, other native species.

Black-Footed Ferret

Provided that habitat conditions remain stable and captive ferrets are available for this project, we would hope to release 15–40 ferrets (with an approximate sex ratio of 50:50) during the first year, although that allocation could be staggered over several periods through the year. Subsequent ferret releases would be based on requirements outlined in the refuge’s annual ferret allocation request submitted to the BFF Center. Ferrets to be released may come from existing wild ferret populations or from animals held and bred in captivity. Captive animals selected for release would be as genetically redundant as possible with the captive population. All released animals would be marked with passive integrated transponder chips, and some may be fitted with radio transmitters. Both captive-raised and wild-born translocated ferrets (trapped from other authorized ferret reintroduction areas) would be released directly into targeted prairie dog complexes at about 18 weeks of age or older. Releases are likely to take place in the fall when juvenile black-footed ferrets in the wild typically become independent; exhibit dispersal behaviors; and are more capable of killing their own prey, avoiding predators, and adjusting to environmental conditions.

Reintroduction of black-footed ferrets would require the legal safeguarding of neighbors in case of incidental take. Targeted outreach efforts would be used to educate refuge neighbors on ferrets and reintroduction issues. Public access to the northern half of the refuge would be restricted to support ferret and bison populations and research activities. For further detailed information on the reintroduction efforts and safeguards, please see “Appendix F—Section 7 Biological Opinion.”

We would also develop a live ferret exhibit to showcase ferret conservation efforts on the refuge and range-wide. This would generally display two live (preferably nonreproductive) ferrets. The selection of specific ferrets for the exhibit would be decided with the BFF Center and consider both range-wide ferret population goals and management considerations of the refuge (for example, individuals that have a history of repeatedly leaving the refuge would be suitable candidates for the exhibit). Although ferrets are nocturnal and may hide from view, the exhibit would be designed to maximize the possibility of visitors viewing these animals while still providing a controlled and secure environment for the ferrets.

Surrogate Species

We would manage surrogate species as described for alternative A.

Other Native Species

We would carry out new feasibility and scientific studies to determine if the greater prairie-chicken, plains sharp-tailed grouse, and pronghorn could be reintroduced. We would reintroduce all native species that studies show could become self-sustaining. We would enforce seasonal closures to safeguard plains sharp-tailed grouse and greater prairie-chicken leks.

Visitor Services

We would foster the public’s appreciation of natural resources and provide inclusive, high-quality, wildlife-dependent recreation, education, and interpretation. We would slightly increase accessible trails, reopen Rattlesnake Hill and Wildlife Watch, and add more wildlife viewing facilities. We would continue to conduct visitor use satisfaction surveys.

Hunting

We would use the refuge as a venue for educating visitors about hunting as a management tool and

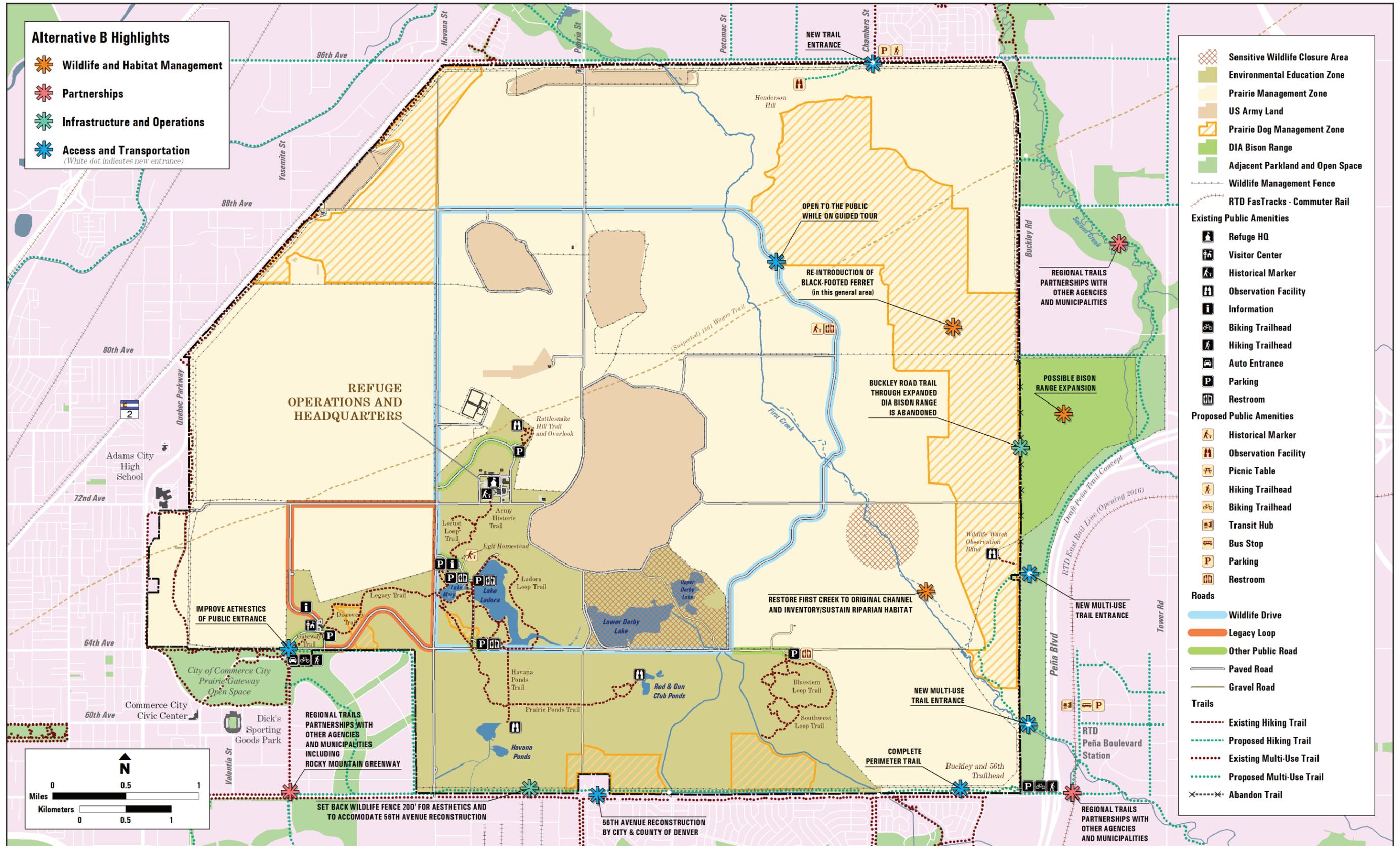


Figure 8. Principal features of alternative B.

partner with CPW to offer hunting education courses. We would also implement a limited archery deer hunting program and would consider the possibility of a limited shotgun hunt for doves. Hunting would be limited to special programs for youth and people with disabilities.

Deer and—if approved and implemented—dove hunting would be carried out in conjunction with State hunting seasons. Additionally, refuge hunts would be by lottery draw only, restricting the number of hunters and the dates on which hunting is allowed. Please see pages 149-150 for additional detail on the type and location of hunting programs.

Fishing

We would undertake minor renovations to facilities and signage to increase the quality of fishing opportunities. Otherwise, fishing opportunities would remain as described for alternative A. We would assess fishing satisfaction with the assistance of anglers, volunteers, and partners.

Wildlife Observation and Photography

In addition to the opportunities described for alternative A, we would add wildlife viewing facilities and trails at Rattlesnake Hill and Wildlife Watch. We would increase the accessibility of existing trails and facilities. Reintroduction of black-footed ferrets would provide new viewing opportunities for visitors, although ferrets are nocturnal and would only rarely be seen in daylight except at the planned exhibit.

Environmental Education and Interpretation

In addition to the opportunities described for alternative A, we would add new curricula covering black-footed ferrets. Implementation would begin with Rhythms of the Refuge, which would offer teacher resources and distance learning. The exhibit featuring live black-footed ferrets described above would contribute to the new environmental education and interpretive programs.

Communication and Outreach

We would continue to use the same communications and outreach tools, resources, messages, and levels of effort as described for alternative A. However, we would enhance our emphasis on the refuge's

conservation efforts as well as the overall purposes of the Refuge System.

Audiences

We would target our traditional refuge use audience as well as wildlife enthusiasts. We would also increase public outreach and refuge promotion in neighboring communities to increase the visibility of the refuge and overcome negative perceptions.

Emphasis of Outreach Message

We would focus our outreach messaging to address safety concerns over the cleanup of refuge habitats, invite visitors to participate in refuge activities and programs, and explain the refuge's wildlife and habitat resources.

Tools and Approaches

Our outreach and communications tools and approaches would be similar to those under alternative A. In addition, we would encourage more cross promotion among partners to raise awareness of the refuge. We would also develop more bilingual resources (such as a refuge Web site, signs, and brochures); increase our communications slightly; and disseminate more information through existing outlets and media.

Partnerships

We would maintain our partnerships as described for alternative A.



Cindy Souders / USFWS

Refuge Day is an important outreach activity that helps connect members of the public to the overall goals of the Refuge System.

Cultural Resources

We would manage cultural resources as described for alternative A.

Research and Science

Research

In addition to the research activities described for alternative A, we would develop opportunities to conduct important research on the reintroduced black-footed ferret population in collaboration with the BFF Center.

Monitoring and Inventory Programs

In addition to the programs described for alternative A, we would undertake the following:

- Develop an Inventory and Monitoring Plan.
- Recommence water quality monitoring and data gathering.
- Adopt the findings of the water management plan.

- Reestablish yearly monitoring of cultural resources sites.
- Monitor reintroduced species for success.
- Introduce the use of hand-held devices (such as tablets) to facilitate improvements in data and information collection and monitoring.

Citizen Science Projects

In addition to the projects described for alternative A, we would increase the extent of existing bird counts as other opportunities arise and implement the Big Sit Bird Count—an annual, international, noncompetitive birding event hosted by Bird Watcher's Digest. It involves bird watchers tallying as many bird species as they see and hear from a limited site (17 feet in diameter) that they remain in for 24 hours.

Climate Change

We would initiate research and monitoring of phenological characteristics (that is, the relationship of plant and animal life cycles with seasonal and inter-annual variations in climate) of various species of plants, birds, and pollinators. We would also be more alert to impacts of climate change on habitat and wildlife regimes at the refuge.



Service staff perform a deer health check.

Social Science, Social Media and Emerging Technologies Research

As described for alternative A, we do not undertake such research. However, we do occasionally permit social science research that benefits refuge management.

Infrastructure and Operations

Staff and Funding

Tables 7 and 8 in section 2.11 provide information on the refuge's funding and personnel scenario under alternative B, which would be similar to, but slightly less than, that under alternative A.

Volunteer Groups and Programs

In addition to the groups and programs described for alternative A, we would help develop a reliable core group to staff the Visitor Center desk and lead various tours and programs. We would offer to support Eagle Scout projects and engage various scout volunteers in other ways.

Facilities

We would develop a site plan for a new administration complex, consider a new office building and the removal of unused facilities (such as trailers and some buildings), and replace current temporary bunkhouses.

In all future facility design, we would reduce the addition of nighttime light pollution, maintain existing ambient natural sounds, and avoid introducing sources of unnatural sounds.

Energy Transmission Towers

Our approach to energy transmission towers would be the same as under alternative A.

Refuge Signs

We would maintain the same array of signage as described for alternative A.

Water-Control Infrastructure and Water Rights

Dams and water rights would be managed as described for alternative A.

Fencing

We would develop a branding scheme, entailing a set of standards for fencing and signage design and material to be implemented consistently across the refuge complex.

Hours of Operation

The hours of operation would remain the same as described for alternative A.

Other Operational Topics

Efforts involving the UDFCD and activities relating to our vulnerability to extreme weather events would be the same as described for alternative A.

Access and Transportation

Points and Types of Access

We would enhance and improve the main general visitor access point, the Prairie Gateway entrance. We would maintain or reevaluate the need for three employee entrances (two electronically controlled, one locked). Current travel modes would continue and include Service-owned bus and vans, autos, recreational biking only to the Visitor Center, and pedestrian access. Commercial touring would not be available.

Way-Finding and Sign Plan

We would address navigation and new ways to bring people to the refuge (for example, way-finding, Colorado Department of Transportation [CDOT], marketing). We would also use way-finding to clarify circulation inside the refuge boundary. We would incorporate positive messages into signs—focusing on what is allowed rather than what is not allowed. We would provide rationales to explain road and area closures. Refuge maps in the Visitor Center and at all kiosk locations would be updated.

Roads and Related Infrastructure

The management of roads and related infrastructure would be as described for alternative A, except that we would discontinue maintenance of, or remove, some of the section line roads. Some of these roads have functional use for the U.S. Army and as fire-breaks. The Wildlife Drive would be expanded for additional self-guided driving opportunities. We

would also formalize information gathering during the FHWA road inventory program network changes or updates.

Legacy Loop

We would improve way-finding along the route and address safety issues with improved mapping and signage. We would pave the remaining eastern section of the road.

Wildlife Drive

We would continue to provide bus-guided interpretive tours on the weekends (reservations would be required). Opportunities for self-guided tours would be developed.

Trail System

We would increase interpretive opportunities and accessibility on the existing trail system. We would improve and build new trail connections with outlying regional trails, complete the Perimeter Trail (coordinate with 56th Avenue Improvement Project and Stapleton), and continue building a connection with the Rocky Mountain Greenway Trail (figure 9). We would rehabilitate and reopen closed trails, including Rattlesnake Hill trail and those closed due to flood damage.

2.6 Summary of Alternative C—Urban Refuge

This alternative focuses on increasing the visibility of the refuge within the Denver Metropolitan area and welcoming many more nontraditional visitors to the refuge (figure 10).

Through an expanded visitor services program, an abundance of instructional programming, and widespread outreach, we would endeavor to connect more people with nature and wildlife.

Under this alternative, more access would be provided to outlying communities with the opening of additional access points and the development of enhanced transportation systems.

Habitat Management

Habitat management under this alternative would be similar to that under alternatives A and B.

Wildlife Management

We would manage wildlife much as we would under alternative B.

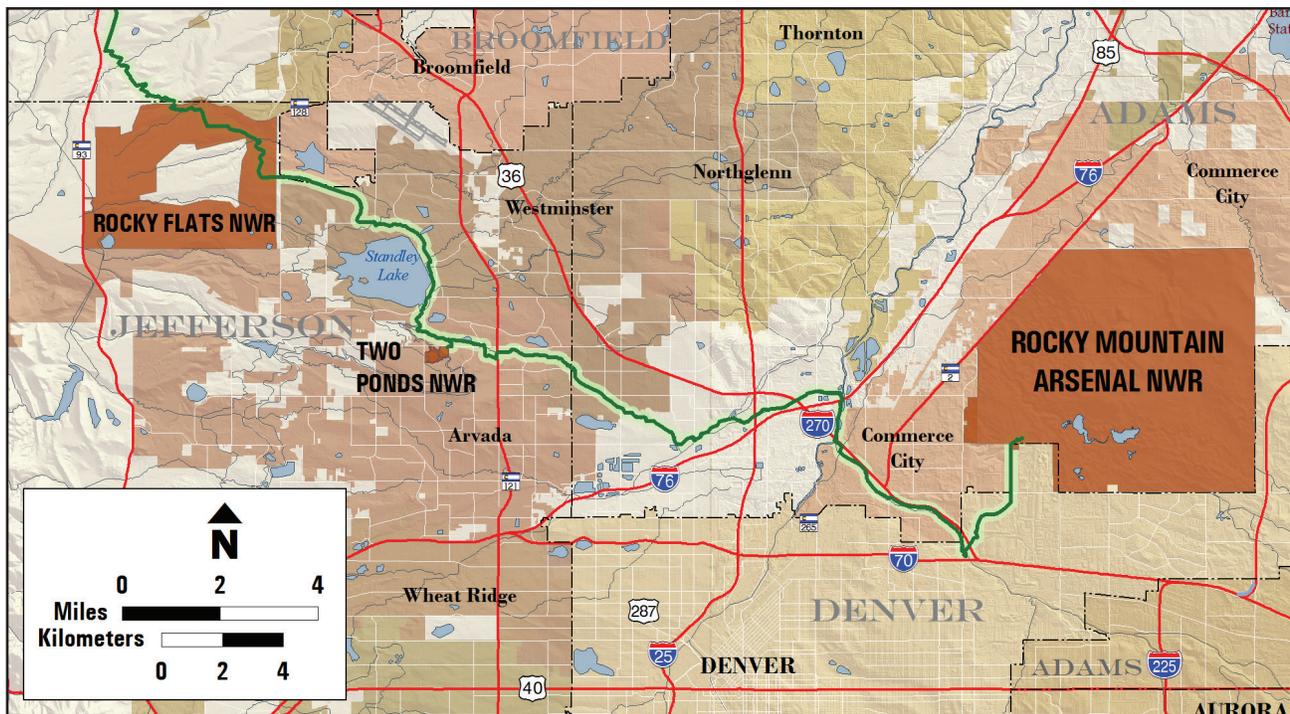


Figure 9. Refuge-to-refuge access on the proposed Rocky Mountain Greenway, Colorado.

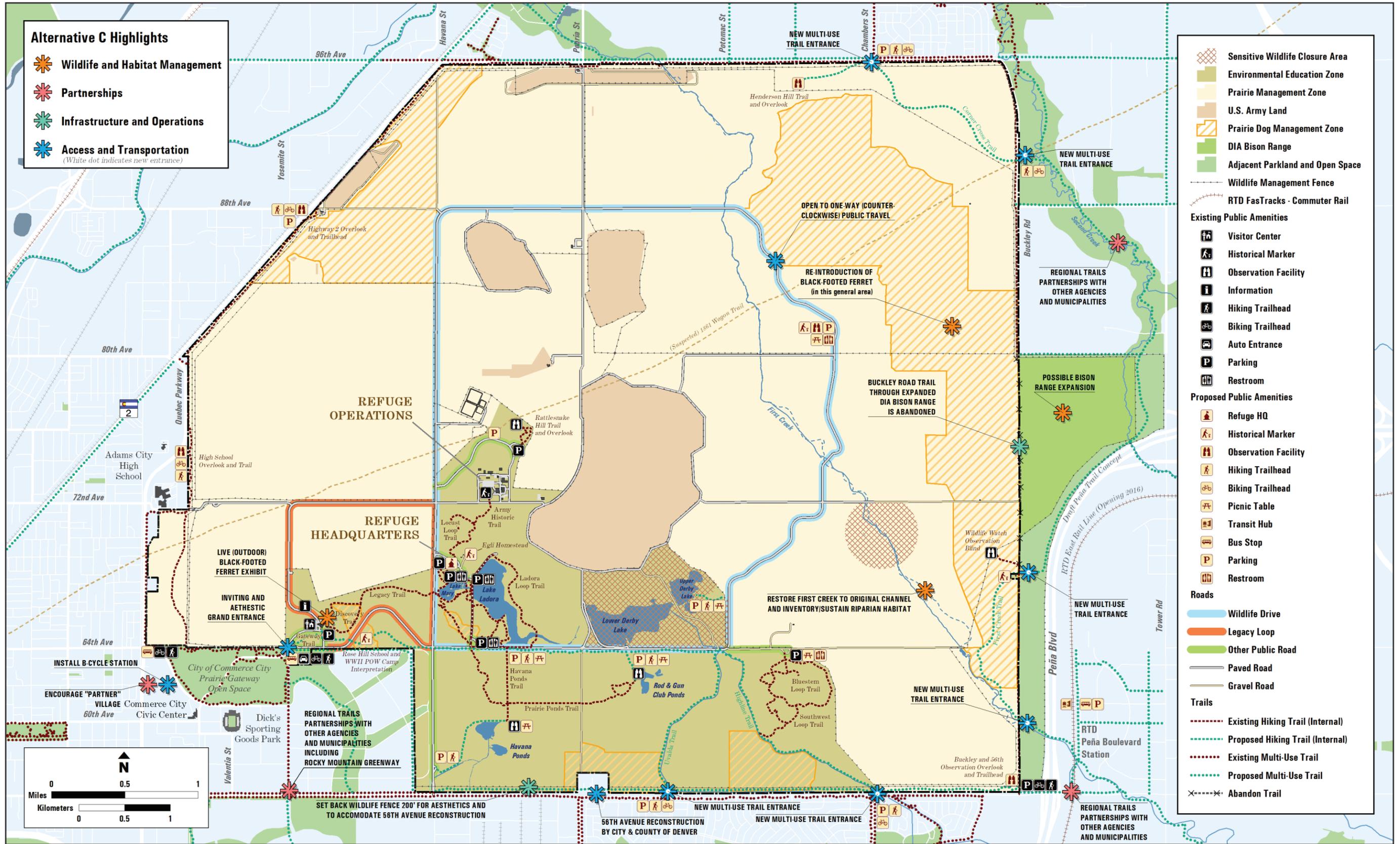


Figure 10. Principal features of alternative C.

Black-Footed Ferret

Our black-footed ferret reintroduction program would be the same as under alternative B. Also, we would investigate opportunities for the public to participate in black-footed ferret spotlighting surveys.

Surrogate Species

We would manage surrogate species as described for alternatives A and B.

Other Native Species

We would seek to reintroduce some or all of the other native species mentioned under alternative A to showcase native prairie ecosystems, even if the populations are not self-sustaining and require further reintroductions.

Visitor Services

Visitor services would include all the features described for alternative B, with the addition of those outlined below.

Hunting

In addition to the hunting-related activities described for alternative B, we would develop an archery range and work with partners to offer instructional archery classes. The refuge would implement limited archery hunts for deer for youth and people with disabilities. Dove hunting with shotguns may also be implemented if further planning shows it is feasible.

Fishing

In addition to the fishing opportunities described for alternative B, we would offer an annual fishing pass. We would initiate introductory fishing classes or educational opportunities and increase instructional fishing programs in partnership with Environmental Learning for Kids and others. We would consider spring instructional programming, hosting fishing clinics to prepare people for the summer season, and organizing additional fishing derbies.

We would improve access by offering shoreline fishing opportunities—an improvement over the current access that is only available from docks, and would improve Lake Mary as a developmental reservoir with more facilities, a high catch rate, and more user-friendly access.

Wildlife Observation and Photography

We would develop more wildlife observation and photography facilities; these would include a new viewing area, four viewing overlooks, and new trails with accessibility for all new facilities. We would increase access by expanding our auto tour routes.

We would develop partnerships to lead more instructional programming and guided tours. We would develop more interpretive panels and brochures to enhance self-guided visitor opportunities. Improved and simplified signs, along with expanded law enforcement, would be used to manage public use and reduce impacts on habitat.

Environmental Education and Interpretation

We would explore nontraditional ways to educate visitors about environmental topics. We would develop partnerships with other organizations and concessionaires to provide environmental education programs and summer camps. We would use current and emerging technology to extend educational “reach” and to connect with a broader audience.

A new Environmental Education Center would be constructed to provide quality experiences. We would deliver more conservation education programs to neighboring communities by partnering with other organizations, such as parks, libraries, recreation centers, and schools. We would expand interpretive programs for adult education as a potential venue for increasing stewardship and volunteerism. We would integrate more art into the refuge programming by developing a Refuge Artist program. We would work with partners to create refuge-inspired nature murals that would help raise the visibility of the refuge in local communities.

Communication and Outreach

Audiences

In addition to audiences targeted under alternative B, we would also target nontraditional refuge visitors and residents of outlying communities. We would strive to improve our understanding of urban demographics of the Denver Metropolitan area to enhance and sharpen our outreach efforts. To this end, we would develop a communications plan for the refuge built on a consistent message for outreach and media.

In support of our efforts to reach nontraditional and underserved audiences, develop messages and approaches to target specific minority groups, and develop outreach specifically tailored to engage youth, we would forge partnerships with groups like Exportiva, Univision, Community Enterprise.

Emphasis of Outreach Message

We would boost the visibility of the refuge and explain the Service's and Refuge System's missions, emphasizing the distinction between a city park and a wildlife refuge. We would emphasize that we invite our neighbors, as well as traditional and nontraditional visitors, to visit the refuge.

We would emphasize how the refuge benefits and serves the community by:

- encouraging better health and school performance by getting kids out in nature;
- improving air and water quality;
- benefitting future generations through the protection and appreciation of natural resources; and
- offering new entry points, expanded hours of operation, and more convenient access.

Tools and Approaches

We would significantly increase communication and disseminate more information through existing outlets and media—like social media, Web sites, and newsletters—while also developing new communication outlets to more effectively reach area residents. We would package refuge experiences into half- or full-day activities that would appeal to the local community, and we would create a monthly Refuge Saturday where organized tours leave from somewhere in the community, tour the refuge, and then return home.

We would use the latest technology to reach and connect with broad audiences, and would build a promotional campaign branding the refuge as a premiere urban refuge with a myriad of opportunities to connect people to nature.

Partnerships

We would focus on more partnerships throughout the Denver area—and especially in surrounding communities and local government agencies—to assist with outreach and to connect more area residents

with refuge resources and programs. Encouraging community partners to use the refuge as a resource for educational and interpretive programming as well as for health and wellness activities would nourish their relationships both with their constituents and with us.

We would leverage partnerships to build physical linkages between the outlying communities, regional trails, and the refuge. By focusing on partnerships that will reach nontraditional visitors and supporting more instructional programming, we hope to connect a broader cross section of our community to their natural surroundings.

We would increase the use of Citizen Science and the collaboration between the refuge and local schools to work on habitat restoration.

We would expand partnerships to include Regional Transportation District (RTD), Denver Regional Council of Governments (DRCOG) and commercial partners.

Cultural Resources

We would manage cultural resources as described for alternative A with the additions listed below:

- We would allow additional storage in existing buildings.
- We would consider additional display of World War II and Cold War items at existing refuge facilities.
- We would enter into partnerships with the Native American community to interpret the prehistoric landscape.
- We would strive to complete full restoration of the exterior of the Egli farmstead, enhancing the public's experience.
- We would provide more guided interpretation (without signs) of cultural resources suited for outdoor storage, such as farm equipment and some World War II/Cold War machines.

Research and Science

Research

In addition to the priorities discussed for alternative B, we would evaluate prairie dog densities, especially as they relate to potential reintroduction of black-footed ferrets. We would emphasize the use of public participation and social media as means of acquiring and collating data to support refuge management.

Monitoring and Inventory Programs

In addition to the programs described for alternative B, we would delegate some of the monitoring and data-gathering activities to volunteers and partners, taking advantage of the increased accessibility and visitation at the refuge, and develop Citizen Science projects to support monitoring of the ferret population as well as bald eagle nesting and roosting. We would enhance monitoring of visitation commensurate with the increased access points, trails, and road system. In addition, neighbor satisfaction surveys would be established.

Citizen Science Projects

We would create additional Citizen Science opportunities, such as tracking phenological characteristics and the monitoring efforts mentioned above. In addition, we would investigate opportunities for the public to participate in black-footed ferret spotlighting surveys.

Climate Change

Our pursuit of climate change information would be the same as described for alternative B.

Social Science, Social Media, and Emerging Technologies

We would consider the installation and use of remote cameras to monitor and provide Web-based public viewing of refuge fauna for species like bald eagles and black-footed ferrets. In addition, we would broaden the use of existing and emerging technologies and social media to aid in wildlife management and tracking while also engaging visitors in conservation activities. For example, we would likely use Facebook, Twitter, or a future social media application to report sightings of birds banded on refuge lands.

Infrastructure and Operations

Staff and Funding

Tables 7 and 8 in section 2.11 provide information on the funding and personnel scenario for alternative C. Alternative C would entail the largest staff and budget of all alternatives.

Volunteer Groups and Programs

In addition to the groups and programs described for alternative B, we would strive to increase the number of volunteer projects and substantially grow the number of refuge volunteers by recruiting from neighboring communities and throughout the Denver Metropolitan area; supporting the Denver Parks and Recreation volunteer coordinator in hosting a project or program on the refuge; and using large volunteer projects (such as National Public Lands Day) to draw attention to the refuge. We would increase offerings of programs that allow visitors to drop in without prior reservations. In planning special events and other programs, we would emphasize quality over quantity. Smaller events would allow for more creativity and would cost less.

Facilities

This alternative would entail substantial changes in the refuge's management direction. We would significantly expand the number of visitor amenities such as restrooms, shade structures, and tables to accommodate more visitors. We would develop facilities that are more appealing to family gatherings. We will strive to make these facilities accessible to people with disabilities to the greatest extent possible.

The Contact Station would be repaired or replaced with a building better suited to educational programming as well as providing meeting space for an array of user groups. Other new facilities would include additional viewing platforms, observation decks, and wildlife observation and photography facilities. We would reopen and improve the Wildlife Watch area; establish a bison viewing area outside the refuge; construct an overlook at Lower Derby Lake; expand and improve interpretation, photography, and wildlife observation opportunities along the Wildlife Drive by constructing more pullouts that feature interpretive panels and observation facilities; build orientation and interpretive kiosks at new pedestrian entrance points; and, if grouse establish leks, we would establish blinds where visitors can observe the birds without disturbing them.

Energy Transmission Towers

We would work to eliminate transmission towers and lines. We would take additional measures to increase energy efficiency and reduce the carbon footprint of operations by expanding our solar array and by incorporating more sustainable practices when developing or renovating additional or existing infrastructure.

Refuge Signs

We would enhance the primary entrance by coordinating with the City of Commerce City to reduce confusion at the entrance and by developing a refuge monument sign that would draw visitors. We would initiate coordination with neighboring partners to develop a unified signage plan, and would use the perimeter fencing as a communication medium for refuge signs, identification, and interpretation. Way-finding and interpretive kiosks would be built to support transportation improvements.

Water-Control Infrastructure and Water Rights

Dams and water rights would be managed as described for alternatives A and B.

Fencing

Building on the branding scheme mentioned for alternative B, we would construct a new gateway arch at the main public gate, install a split-rail fence in some areas to establish a more aesthetically pleasing boundary, establish wildlife fencing that is set back from roads, and create distinct access points where the fence could be opened to foot traffic.

Hours of Operation

The hours of operation would remain the same as described for alternatives A and B.

Other Operational Topics

Efforts involving the UDFCD and activities pertaining to our vulnerability to extreme weather events would be the same as described for alternatives A and B.

Access and Transportation

Points and Types of Access

Under alternative C, we would add pedestrian and bicycle access points and work with RTD to connect neighborhoods to the refuge via the public transit system. Additional travel modes including cross country skiing, jogging, and expanded bike access would be permitted. We would also consider adding another Service-owned bus with bike racks, as well as a commercial bus and a bike sharing system.

Way-Finding and Sign Plan

In addition to improvements described for alternative B, we would coordinate with neighbors and partners to develop a unified approach to our way-finding and signage program.

Roads and Related Infrastructure

In addition to improvements described for alternative B, we would improve multiple intersections, and we would modify the large Texas Crossing on the northern Wildlife Drive. We would incorporate bike infrastructure into the road system. Signs on the refuge would be enhanced for improved movement and flow.

Legacy Loop

We would add additional pull-outs and add a designated bike/pedestrian path that is paved, detached from the road, and in keeping with accessibility standards.

Wildlife Drive

We would expand scheduled bus or tram service (that is, not requiring reservations) in coordination with RTD. In addition, we would open the entire drive to public vehicles for one-way traffic. This added access would entail building pull-outs, improving interpretive signs and way-finding along the route, and modifying the Texas Crossing for safe public use.

Trail System

We would build new and extend existing trails with additional trailheads and access points, such as expanded trails at Wildlife Watch and Henderson Overlook. In addition, we would open some roads and trails to bicycle access. We would coordinate with

stakeholders and adjacent landowners to manage pedestrian and bicycle access along the Perimeter Trail.

2.7 Summary of Alternative D—Gateway Refuge

This alternative emphasizes increased visibility of the refuge, the refuge system, and other public lands in the area (figure 11).

There would be less visitor services programming at the refuge than under Alternative C, and we would emphasize offsite programs in conjunction with partners.

Habitat Management

Habitat management under this alternative would be similar to that under alternatives A, B, and C. Additionally, we would pursue collaborative efforts with neighbors and other groups to preserve and improve wildlife habitat connectivity.

Wildlife Management

We would manage wildlife much as we would under alternatives B and C.

Black-Footed Ferret

In addition to the priorities described for alternative C, we would establish a ferret-specific set of partnerships and collaborative activities, sharing knowledge with entities such as CPW, the Denver Zoo, and the BFF Center. In addition, we would develop partnerships with CPW to manage ferrets onsite and offsite.

Other Native Species

In addition to the priorities described for alternative B, we would work with neighboring landowners to extend the range of native species.

Surrogate Species

We would manage surrogate species as described for alternative A.

Visitor Services

Hunting

Hunting-related activities would be similar to those described for alternative A—that is, there would be no hunting or hunter education—but we would promote hunting opportunities throughout Colorado and the Refuge System.

Fishing

In addition to the fishing opportunities described for alternative B, we would explore raising fees to support increased fish stocking rates and expanded programming, as well as increasing fishing days and hours. We would promote fishing opportunities throughout the Refuge System and Colorado, and we would partner with others to implement fishing improvements and expanded programming such as more advanced fishing classes (fly fishing demonstration, fly tying, fish identification) and more partner-run fishing programs and events. We may offer a fishing concession (such as rod rentals and lessons).

Potential partners could include nonprofit organizations such as SPREE: The Greenway Foundation, corporate partners like Bass Pro Shop, and agency partners like CPW.

Wildlife Observation and Photography

In addition to the opportunities described for alternative B, accessibility would be incorporated into all new facilities. We would offer more partner- and concessionaire-led guided tours and programming, as well as advanced photography classes.

We would promote the refuge as a birding destination. If native species—such as greater prairie-chicken, pronghorn, and plains sharp-tailed grouse—are reintroduced, we would offer wildlife viewing and tours to plains sharp-tailed grouse leks led by partners or concessionaires.

Environmental Education and Interpretation

In addition to the opportunities described for alternative B, we would expand environmental education programming at the refuge for youth and adults. We would explore concessionaire- or partner-led summer camps on the refuge, design a career experience program, develop a summer refuge intern program, develop vocational programs for high school and college students, and work with surrounding

high schools and community organizations to raise awareness of and promote conservation careers.

We may offer regular educational adult forums (such as invited speakers), possibly charging an admission fee to help entice speakers. We would collaborate with universities to expand learning opportunities, and would support student researchers, whose engagement could include making presentations to visitors. We would offer expanded interpretive programs about refuge history and cultural resources.

We may develop more programs in partnership with neighboring parks and recreation departments and the Sand Creek Greenway. We would encourage partners to cross-promote refuge programs, interpret at their sites, and incorporate nature play into facilities at their sites. We could provide more offsite interpretive programming.

We may explore developing an onsite living history program in collaboration with outside partners, beginning with the rehabilitation of the Egli House as a venue. Such a program could include reenactments of prairie living—such as the settlement era, Native American history, and wagon train prairie crossings.

Communications and Outreach

Audiences

Our target audiences would be similar to those under alternative C. We would develop a communications plan for the entire refuge complex, and we would recruit partners to reach out to their constituencies. We would specifically target birders and history enthusiasts, as well as appealing to international visitors.

Emphasis of Outreach Message

In addition to the message outlined for alternative B, we would emphasize conservation and the refuge's transformation and evolution. We would appeal to history enthusiasts with messaging related to the site's history. We would step up promotion of the entire refuge complex as well as other regional prairie sites, and we would coordinate with regional entities to promote improved regional access to the refuge.

Tools and Approaches

The Colorado Parks and Recreation Association (CPRA) is an untapped resource that we might

engage, participating in that entity's state conference and inviting its members to visit the refuge. The CPRA could create a promotional package for the refuge. We could also approach Channel 8, Denver Business Bureau, DIA, and Visit Denver to help us promote the refuge, and we could establish more of a presence at DIA. We could use the refuge Web site as a clearinghouse for regional events and activities.

We would use the latest technology to reach broad audiences and connect with them. Possibilities include:

- employing social marketing to broaden the Service's reach;
- engaging visitors to use social media to share wildlife sightings and plant discoveries (a component of Citizen Science that can also help refuge biologists);
- maintaining and regularly updating the refuge Web site;
- soliciting partners and volunteers to post regularly on Facebook;
- recruiting interns to explore technologies and outreach strategies;
- sharing refuge images and videos (using social media such as Instagram, Pinterest, and YouTube); and
- translating the Web site into multiple languages to help boost international visitation.



Secretary of the Interior with members of the Mile High Youth Corps

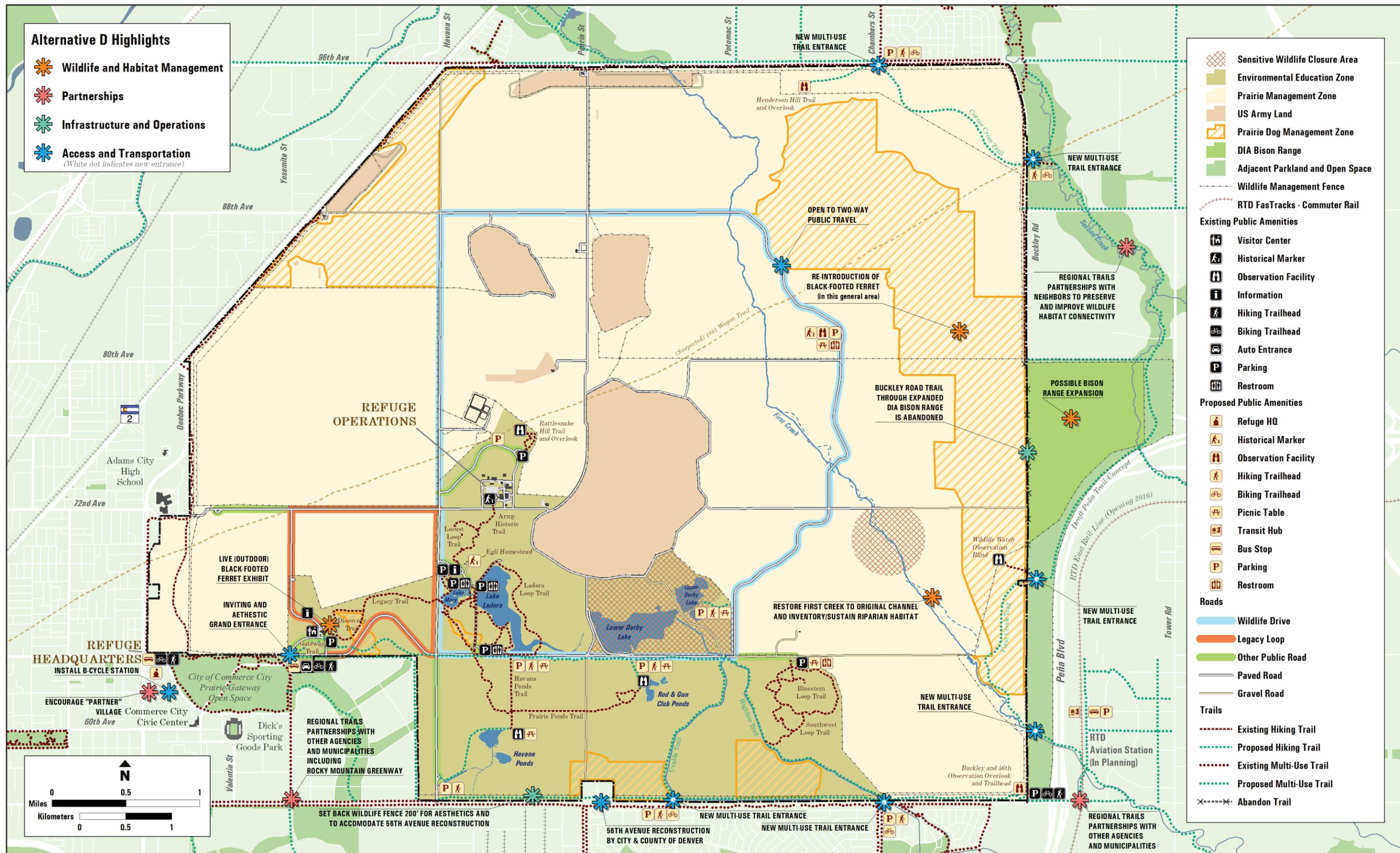


Figure 11. Principal features of alternative D.

Partnerships

We would focus on engaging partners to expand programming and wildlife-dependent recreation and increase their autonomy in conducting these activities. Using this approach, we would support activities such as day camps, the Master Naturalist Program, certified interpretive guide training, Backyard Habitat with the National Wildlife Federation, photography tours and classes, advanced birding with groups such as Audubon, and fishing clinics with groups like Trout Unlimited and Orvis.

We would expand our breadth of partnerships to include conservation organizations, local governments, government agencies, and private companies in expanding programming and visitor use activities both on and off the refuge. We would establish a regional prairie coalition to cross-promote programming, activities, and research among conservation groups and natural areas throughout the Front Range. We would engage partnerships to create more physical links connecting outlying communities, regional trails, and the refuge.

We would develop specific partnerships to support black-footed ferret recovery and collaborative activities, working with groups such as CPW, the Denver Zoo, and the BFF Center. We would also develop partnerships with CPW to manage ferrets on- and offsite, enter into collaborative efforts and partnerships with neighbors and other groups to preserve and improve wildlife habitat connectivity, and increase collaboration with other divisions of the Service and other agencies and organizations on issues related to migratory birds and federally listed species. We would seek ways to collaborate with other states and nations to address species concerns that transcend borders (for example, Swainson's hawk research and management in Argentina); leveraging, if possible, nearby cities' international sister cities to share conservation research and practices.

We would build additional partnerships with light rail or Fast Tracks, CDOT, DIA (for outreach to international travelers), and RTD (to promote increased frequency of routes providing refuge access). We would pursue other partnerships (for example, with FHWA, NPS, USFS, USFWS R6 RO, cities, counties, and nonprofit organizations) under the America's Great Outdoors initiative.

We would work with partners and corporate sponsors to host two additional large annual events. We would tie into nationwide events like Public Lands Day, Earth Day, and National Trails Day. We could host some other type of large-scale race, fundraiser, or competition on the refuge that could start and finish offsite to keep the parking and traffic outside the refuge.

Cultural Resources

We would manage cultural resources as described for alternative C with the additions listed below:

- We would work with partners to establish an offsite World War II and Cold War museum owned and operated by an organization other than the Service.
- We would conduct further research on prehistoric sites on the refuge.
- We would undertake full restoration of the interior and exterior of the Egli farmstead to allow for reuse and comprehensive interpretation.
- We would permit and encourage occasional living history interpretation of early homesteading/farming and establish electronic/remote tools to provide interpretation.

Research and Science

Research

In addition to the priorities discussed for alternative C, we would strive to increase collaborative research projects where the refuge serves as a field laboratory for others. We would research prehistoric use of overlooks at First Creek and Second Creek. If possible, we would make existing office trailers available to facilitate research on black-footed ferrets.

We would increase cooperation with universities and other institutions of higher education, both nationally and internationally, on research initiatives. We would explore increasing research programs to study the response of grassland birds (such as lark bunting, grasshopper sparrow, and Cassin's sparrow) and pollinators (bats, insects, and birds) to evolving prairies that have been subjected to habitat restoration activities. We would also study responses of coyotes to changes in prey base, parasitism (such as mange), and wildlife diseases (like rabies, chronic wasting disease, botulism, and avian influenza).

Monitoring and Inventory Programs

In addition to the programs described for alternative C, implement monitoring and inventory for research projects described above. In addition, we would jointly monitor (with organizations like DIA

and APHIS) the spread and extent of prairie dog populations.

Citizen Science Projects

In addition to the programs described for alternative C, we would link Citizen Science opportunities with other citizen research that takes place elsewhere on the refuge complex as well as on partners' sites.

Climate Change

In addition to the programs described for alternative B, we would seek information and opportunities to exchange knowledge with neighbors, other agencies, and partners. We would collaborate with DIA, Colorado Department of Public Health and Environment (CDPHE), and the Regional Air Quality Council (RAQC) on air quality monitoring.

Social Science, Social Media, and Emerging Technologies

In addition to the efforts described for alternative C, we would, as appropriate, institute the use of the same data collection and modeling platforms that refuge partners and other agencies use, and we would enlarge the range of partners and other agencies with whom we would share wildlife data (such as bison and bird bands).

Infrastructure and Operations

Staff and Funding

Tables 7 and 8 in section 2.11 provide information on the funding and personnel scenario for alternative D.

Staffing would and budget under alternative D would be less than under alternative C but more than under alternatives A and B. We would add commercial transit operators and a partner coordinator would replace the Service-supported volunteer coordinator.

Volunteer Groups and Programs

Although the volunteer programs under alternative D would be similar to those under alternative C, alternative D calls for the largest volunteer program of all the alternatives that would be needed to support extensive off-site work. In addition to the strategies described for alternative C, we would develop a

system for sharing volunteers among the three refuges in the complex, as well as among partnering groups.

Facilities

In addition to the facilities directions described for alternative B, we would develop food concessions and partnerships with food truck businesses. We would also rehabilitate and improve facilities to better interpret cultural resources and enhance the visitor experience. We would rehabilitate the old U.S. Army communications building (Building 112) to house exhibits interpreting the site's history, or perhaps convert it into a Cold War museum. We would improve and interpret the bunker on the Wildlife Drive (observation bunker for impact area). We would identify and memorialize the POW internment camp and also memorialize the Ivory Crush event that was held on the refuge in 2013 to dramatize the severity of the illegal wildlife trade.

Energy Transmission Towers

Our approach to energy transmission towers and other energy-related infrastructure would be the same as under alternative C.

Refuge Signs

In addition to the signage priorities described for alternative C, we would develop signs to promote other regional opportunities.

Water-Control Infrastructure and Water Rights

Dams and water rights would be managed as described for alternatives A, B, and C.

Fencing

In addition to the fencing priorities described for alternative C, we would improve the appearance and uniformity of fencing and refuge access points, extend branding across the refuge complex and to adjacent jurisdictions and landowners, and identify additional access points where the fence could be opened to foot traffic to promote regional connections.

Hours of Operation

The hours of operation would remain the same as described for alternatives A, B, and C.

Other Operational Topics

Efforts involving the UDFCD and activities pertaining to our vulnerability to extreme weather events would be the same as described for alternatives A, B, and C.

Access and Transportation

Points and Types of Access

In addition to the priorities described for alternative C, we would add pedestrian and bicycle access points to Henderson Hill overlook and trail (north boundary), add southeast viewing access, create more connections to the Rocky Mountain Greenway, create a trail connection to the Fast Tracks Pena station, and reach out to DIA to improve the physical connections between the airport and the refuge. Travel modes would include snowshoeing, cross-country skiing, road or mountain bikes, and automobiles. We would develop a more robust bike sharing system with links to regional trail systems and regional B-cycle stations, and we would focus on developing and promoting the Rocky Mountain Greenway and ways to physically link the three refuges.

Way-Finding and Sign Plan

The way-finding and sign plan under this alternative would be similar to that described for alternative B.

Roads and Related Infrastructure

In addition to the improvements described for alternative C, we would incorporate bike infrastructure into the road system, including striping bike lanes and an off-street path on the Wildlife Drive; we would also stripe for two-way traffic and add pull-outs, traffic control, and speed bumps on the northern portion of the Wildlife Drive.

Legacy Loop

Improvements to Legacy Loop would be the same as those described for alternative C.

Wildlife Drive

In addition to the improvements described for alternative C, we would open the drive to public vehicles for two-way traffic.

Trail System

In addition to improvements described for alternative C, we would develop an even more extensive trail system, coordinate with stakeholders and adjacent landowners to manage access along the Perimeter Trail, work to Connect Rocky Mountain Greenway Trail with First Creek Trail and Second Creek Trail, improve signs, and promote trail links.

2.8 Foreseeable Activities

Denver International Airport

DIA abuts the refuge on the east, the boundary between them defined by Buckley Road. From 56th Avenue to approximately 80th Avenue, Buckley Road is shared by the refuge and DIA: the northern half owned by DIA and the southern half by the refuge. Buckley Road has been vacated in this general area.

Encompassing 53 square miles, DIA is the largest airport in North America and the second largest airport in the world. This extent is intended to minimize the impacts of airport activity on the airport's neighbors and to allow room for the airport to expand. Forecasts indicate that DIA will experience 2.3–2.5% annual growth between 2015 and 2040 (Brandon Howes, senior landside planner, Planning and Environmental Services, Denver International Airport; e-mail; January 2015).

DIA's original master plan, developed in 1988, provided guidance for the airport to a threshold of 50 million annual passengers. Having reached that threshold, DIA completed a master plan update in 2011 that provides development guidelines through 2030. In the short term, DIA will complete a new 519-room on-airport hotel in 2015, build a new fire station, and connect to the East Commuter Rail line by 2016. The construction of a new (seventh) runway and capacity expansion of Peña Boulevard (the airport's entrance road) are anticipated for the intermediate term (Denver International Airport 2009).

In July 2014, Denver Mayor Michael Hancock in his State of the City Address announced that Denver Parks and Recreation would restore nearly 200 acres of habitat between the refuge and Peña Boulevard.

I am also proud to announce that the city is restoring and preserving nearly 200 acres of habitat between the Rocky Mountain Arsenal National Wildlife Refuge and Peña Boulevard

near DIA. Adjacent to the 61st and Peña transit station, we envision an accessible open space area of native grasses and waterways where people can walk with their kids and take in awe-inspiring views. They might even see bison and bald eagles.

I want to thank our partners at the refuge as we launch this project. I hope we will ultimately be able to restore more than 650 acres of open space in this corridor in collaboration with our neighbors in Commerce City and Adams County.

Surrounding Roadways

Section 5(a)(2) of the Rocky Mountain Arsenal National Wildlife Refuge Act of 1992 (Public Law 102-402, 106 STAT 1961) required the U.S. Army to provide up to 100 feet of land to State and local governments to expand existing roads surrounding the refuge. Proposed improvements to State Highway 2, 56th Avenue, and 96th Avenue are described below.

Highway 2

State Highway 2 defines the northwestern boundary of the refuge from Quebec Parkway to 96th Avenue. The refuge perimeter trail and several proposed overlooks are located in this corridor.

In September 2014, the City of Commerce City issued a request for proposals to begin preliminary planning and design to expand Highway 2 between 72nd Avenue and the bridge over the Burlington Northern–Santa Fe railroad (660 feet short of Interstate [I-] 76). This project would include all aspects of planning necessary to begin construction in March 2016.

56th Avenue

The refuge's southern boundary from Buckley Road to Havana Street follows 56th Avenue, a major east–west regional thoroughfare. In addition to its regional function, 56th Avenue serves as an important access route to DIA as well as providing relief to I-70 during freeway incidents.

In 2008, the City and County of Denver, in partnership with FHWA and CDOT, completed the 56th Avenue Corridor Study and associated compliance documents (URS Corporation 2008). This study recommended widening 56th Avenue to six lanes with a raised center median and detached multi-use paths on both the north and south sides of the new roadway.

The study also describes and identifies the location of up to four wildlife overlooks to provide increased accessibility to the refuge, opportunities for creating vehicle pullouts and modest parking areas for wildlife viewing areas, and access to the area trail system. Concept-level illustrations for these wildlife viewing areas are provided in the study. Each could comprise a small parking area, pedestrian and bicycle trail access, interpretative signing, telescopes, and seating areas (URS Corporation 2008). The refuge would also use wayfinding signs to direct visitors to its main entrance where car entry is allowed.

Continued expansion of 56th Avenue is anticipated to occur during implementation of this plan. We would coordinate with the City and County of Denver on relocation of existing refuge fences as well as on final placement and design of wildlife overlooks.

96th Avenue

The refuge's northern boundary follows 96th Avenue from Buckley Road to Highway 2. As Commerce City continues to grow, 96th Avenue is emerging as an important transportation corridor.

Residential development is taking place in the Reunion neighborhood near the northeast corner of the refuge.

Commerce City's master plan allows for additional residential and commercial north of 96th Avenue (City of Commerce City 2010). Planned open space includes corridors along both the First Creek and Second Creek drainages (City of Commerce City 2007). Design and construction are underway to expand 96th Avenue from Buckley Road to Tower Road, including construction of a bridge over Second Creek and installing storm sewers, curbs, gutters, sidewalks, street lighting, and traffic signals (City of Commerce City 2013). Expansion of 96th Avenue is anticipated to continue during implementation of this plan.

In 2013, the City of Commerce City notified the refuge that the alignment of this 96th Avenue project had been shifted to protect wetlands in the Second Creek drainage. Continued expansion of 96th Avenue west of Buckley Road would require a minor land exchange to ensure adequate rights-of-way for the refuge's Perimeter Trail. Consistent with our policies (342 FW 5), approximately 12,000 square feet of land in the refuge's northeasternmost corner would be exchanged for lands of equal value that benefit the refuge near our main gate.

Section 10

In 1969, the U.S. Army provided portions of Section 10, in the south-central area of the refuge, to the City and County of Denver to enlarge runways for the Stapleton International Airport. The United States retained certain interests in these lands—primarily easements for railroads and utilities crossing the area. With Stapleton’s closure in 1995, the Stapleton Master Development Plan was developed to guide the transition of the former airport to a new community (Stapleton Redevelopment Foundation 1995). A General Development Plan for the site that was approved by the Denver Planning Board in November 2014 will be used as a guide for future development (Matrix Design Group 2014).

Natural Resource Damages

In accordance with Superfund regulations, a natural resource damage assessment of the Rocky Mountain Arsenal Superfund site was completed in October 2007. In May 2008, the State of Colorado, the Federal Government, and Shell Oil Company reached a settlement on the natural resource damages associated with the site. Funds recovered from this settlement represent mitigation for damage to natural resources including fish and wildlife and their habitats. Specifically, restoration can be accomplished by directly restoring the injured resource, or by rehabilitating, replacing, or acquiring equivalent resources (Natural Resource Trustees 2007). This so-called Rocky Mountain Arsenal Recovery Fund was to be managed by the Colorado Natural Resources Trustees. In July 2012, the Trustees awarded 10.15 million dollars in projects; in September 2014, they awarded an additional 17.4 million dollars in projects. These projects generally occur in the refuge’s immediate geographic area.

Climate Change

Scientific evidence indicates that the global climate is changing. Most scientists agree that this change will result in a fluctuations in the abundance and distribution of wildlife and their habitats. In response to a rapid warming trend, some species may be able to adapt, some may struggle, and others may disappear forever. The Service’s dedication to the conservation of wildlife and their habitats includes reducing, to the extent possible, the impacts that climate change may have on the Nation’s natural heritage (FWS 2013j).

The direction and magnitude of ecosystem change in response to climate change will depend on the type and intensity of the disturbance (Backlund et al. 2008). Ecological changes in the phenology and distribution of plants and animals are occurring in all well-studied terrestrial systems. These observed changes appear to be consistent with modeled predictions and have been linked to local or regional climate change (Parmesan 2006). Ecosystem structure and function in the central Great Plains are closely associated with regional climatic gradient, precipitation being the most important climatic variable (Burke et al. 1991).

The potential effects of even small changes in climate could be significant on the refuge in light of the area’s history of severe soil disturbance and the abundance of invasive species. Because many native plants and animals that currently inhabit the refuge are near the limits of their current known ranges, small changes in climate may provide a competitive advantage to invasive and nonnative species already established on refuge lands. For example, species that were once limited by elevation or drought tolerances may be able to inhabit new areas (Backlund et al. 2008).

Given these concerns, restoring and maintaining native plant communities is and will continue to be a primary focus of management on refuge. Native communities tend to be more resilient than nonnative communities and consequently represent the best approach for addressing potential long-term climate change (FWS 2013j). In addition, native plant communities provide suitable habitat for wildlife—the Service’s primary mission.

Climate Change in Colorado

Colorado’s climate is unlike that of any other state—it is characterized by the high elevations and complex topography of the Rocky Mountains, the Colorado Plateau and valleys of the West Slope, and the high plains falling off from the Continental Divide toward the east (Ray et al. 2008). East of the mountains the battle among subtropical, Pacific, and polar continental air masses determines which years are warmer or colder than average. The climate of the 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 (Pielke Sr. et al. 2003). Weather on the refuge is dominated by warm-season precipitation, largely a result of localized convective storms.

In Colorado, statewide temperatures have increased about 2 degrees Fahrenheit (°F) over 30 years. Regionally, the north-central part of the State has been warming fastest (a +2.5 °F change in the

annual average over the past 50 years). Minimum temperatures show greater overall warming than maximum temperatures in the last 50 years. In all parts of Colorado, no consistent long-term trends in annual precipitation have been detected in the time periods analyzed (Ray et al. 2008). A widespread and significant increase in the proportion of precipitation falling as rain rather than snow and a reduction in snow water equivalent have been observed elsewhere in the West between 1949 and 2004. In Colorado, however, these changes have been less pronounced (Knowles et al. 2006). Observed warming may have increased the severity of droughts (Andreadis and Lettenmaier 2006) and their impacts (Breshears et al. 2005).

Focusing on Colorado, the multi-model average projects an annual mean warming of about 4 °F [+2.5 to +5.5 °F] by 2050 in Colorado as part of a continent-wide pattern of warming. The projections show summers warming more (+5 °F [+3 to +7 °F]) than winters (+3 °F [+2 to +5 °F]). Temperature increases are greatest in the summer. Most of the projections suggest that typical summer temperatures will equal or exceed the extreme warm summers of the last half of the twentieth century. The projected temperature changes are somewhat less for winter, and the year-to-year variations are larger. While extreme warm winter months would increase in these projections, most years—even by 2050—will not be extreme by present standards. Mid-twenty-first century summer temperatures on Colorado's eastern plains of projected to shift westward and upslope, bringing into the Front Range temperature regimes that today occur near the Kansas border (Ray et al. 2008). Individual model projections do not agree whether annual mean precipitation will increase or decrease in Colorado by 2050. Projections show a precipitous decline in lower elevation (below 8,200 feet) snowpack across the West by the mid-twenty-first century. The multi-model average shows little change in annual mean precipitation by 2050, although a seasonal shift in precipitation does emerge (Ray et al. 2008).

The State believes that the most serious anticipated impacts of climate change include increasing frequency and severity of forest insect infestations and wildfires (both of which are believed to be occurring already), and changes in the hydrologic cycle that will affect fish and other aquatic organisms. Climate is a key determinant of the spatial distribution and characteristics of ecosystems and species. In both aquatic and terrestrial environments, we should expect northward and upward shifts in the distribution of animal and plant species and ecosystems in response to warming temperatures. Similarly, it is anticipated that warming would shift the phenology (the timing of life-cycle events such as flowering and hibernation) of both plants and animals, independent

of changes in range. The most climate-vulnerable ecosystems in Colorado may be short-grass prairie, fire-dependent forests, and aquatic ecosystems (Averyt et al. 2011).

Climate Change Strategies for Surrogate Species in Colorado

The potential effects of climate change on fish and wildlife that currently inhabit the refuge are broad, and many of the stressors occur beyond the refuge's boundaries. Under our circumstances, increasing the size of the refuge is not an option. Accordingly, our principal strategy for mitigating the effects of climate change is to maintain the resilience of short-grass and mixed-grass habitats on the refuge through the use of fire and grazing.

Grassland Birds

The Audubon Society recently announced that of the 588 North American bird species studied, more than half (314 species) are considered "climate endangered or climate threatened" due to loss of habitat (Nijhuis 2014). Similarly, the State of Birds report on climate change (U.S. North American Bird Conservation Initiative 2010) asserts that climate change is expected to exacerbate declines in birds that already suffer declining populations. The lark bunting and Cassin's sparrow are representative of other grassland birds using the refuge and are identified in this report with a medium score for climate vulnerability. Even subtle climate changes are causing northward distributional shifts in both species, and Cassin's sparrow is moving northward at more than half a degree of latitude per decade (about 5 kilometers per year) (Peterson and Baltosser 2003).

Juvenile survival can also have dramatic effects on population dynamics (Robinson et al. 2004). Severe drought has been shown to have multiple impacts on grassland birds (George et al. 1992). Drought reduces post-fledgling survival of lark buntings in northeast Colorado through starvation and increased predation (Yackel Adams et al. 2006). The refuge's habitat restoration program is still in its early stages, but implementation of vegetative monitoring specified in our HMP (USFWS 2013i) as well as new monitoring programs designed for our focal bird species may help illuminate climate change effects on the refuge.

Black-Tailed Prairie Dogs

Black-tailed prairie dogs and their habitat serve as surrogates for many species on the refuge. They also constitute an important food source for many predators. Factors other than predation—such as climatic changes, shifts in the availability of edible

plants, and outbreaks of disease—also affect the size of prairie dog populations. Longer growing seasons, higher temperatures, changes in fire regime, and increased variability in weather will affect prairie dog food sources, increase competition, and increase the risk of plague outbreaks (Davis et al. 2004; Stenseth et al. 2008).

Changes in habitat that result from prairie dog activity could either accelerate or mitigate the consequences of climate change. Accelerated effects could involve the loss of grasslands through increased desertification, while mitigating effects could be manifested as reductions in the spread of exotic species, impediments to shrub encroachment, and maintenance of species diversity (Fahnestock et al. 2003; Larson et al. 2001; Weltzin and McPherson 1997). Our HMP (FWS 2013a) and Black-Tailed Prairie Dog Management Plan (FWS 2013b) recommend that, to continue addressing potential effects of climate change, care be taken to retain both large and small and isolated and interconnected prairie dog colonies (Friggens 2011).

Bison

Bison are extremely well adapted to a wide range of environmental conditions. Climate change will affect relationships between C3 (forbs, woody plants, legumes) and C4 (grasses, sedges) plants in North American grasslands (Fischer et al. 2008). Similarly, temperature changes may have greater influence than the amount of precipitation on native prairie forb species (Adler and HilleRisLambers 2008). Impacts on prairie plant species will be particularly difficult to predict, as will be the effect on our bison herd. Bison herbivory is a key ingredient to our habitat restoration objectives, but grazing intensity will need to be monitored and managed to minimize degradation. Of particular concern in the context of the refuge's bison herd is the relationship between climate change and emerging infectious diseases in wildlife. The pressures of human encroachment and shrinking wildlife habitat tend to increase wildlife densities and the emergence of disease (Daszak et al. 2000). The refuge's bison herd is contained and managed, but remains vulnerable to emerging disease threats.

Climate Change Policies

In 2001, the Secretary of the Department of the Interior issued Secretarial Order 3226 (DOI 2001) requiring Federal agencies under its direction that have land management responsibilities to consider potential climate change effects as part of long-range planning endeavors. Recently, this order was replaced by Secretarial Order 3289 (DOI 2009). It left intact many of the planning requirements of Secretarial Order 3226, reiterating the need to analyze

climate change effects, but made organizational changes to enable the bureaus and agencies to fulfill the planning requirements. In 2009, President Obama signed Executive Order 13514 requiring Federal agencies to establish an integrated strategy toward sustainability in the Federal Government and to make reduction of greenhouse gas emissions a priority for Federal agencies. In 2010, the Service completed its strategic plan for managing climate change (FWS 2010a). As part of implementing the Refuge System's Conserving the Future document, all this information was synthesized into a document to assist planners and managers fulfill these mandates and incorporate climate change considerations into planning documents (FWS 2014e).

2.9 Elements Considered but Eliminated from Further Consideration

During scoping and alternatives development, our staff, interested groups, cooperating agencies, other Federal and State agencies, and the public suggested several ideas, issues, or elements of alternatives that we considered but eventually eliminated from further analysis. We discuss these elements below.

Divestiture of the Refuge

The unique history of this site and its transformation into a national wildlife refuge are well described. The challenges associated with managing this former Superfund site as a national wildlife refuge are also well documented. When a refuge cannot be managed for the purposes for which it was established and in accordance with the National Wildlife Refuge Administration Act, the Service will consider divesting the property. The land use restrictions (see section 1.2) on this site are a major issue affecting the successful management of these lands as a national wildlife refuge. This plan assumes that our issues can be resolved in the near future. If we are unable to find resolution and we prove unable to properly manage these lands as a national wildlife refuge, divestiture of the refuge would be considered in a different and thorough process.

ASSISTANCE WITH SITE PLANNING AND DESIGN

During the CCP process, the planning team recognized the need to explore a variety of options related to refuge planning and design. Specific needs include overall master planning; site planning for individual facilities; development of consistent design guidelines for facilities; and development of a unique brand to increase the refuge's visibility in the broader Denver Metropolitan region. To address these needs and further our goals under the Urban Wildlife Conservation Program—which emphasizes connecting people with nature and engaging local communities—the planning team has sought assistance from the Department of Landscape Architecture at the University of Colorado at Denver (UCD).

Landscape architecture is the design of outdoor public areas, landmarks, and structures to achieve environmental, social-behavioral, or aesthetic outcomes. It involves the systematic investigation of existing social, ecological, and geological conditions and processes in the landscape, and the design of facilities and structures that will produce the desired outcome.

The Landscape Architecture program at UCD emphasizes design to support human wellbeing and environmental balance.

The planning team envisions a partnership with the Department of Landscape Architecture to assist with planning and design for the refuge as we complete restoration of the site and transition to managing solely for wildlife and welcoming many more visitors to the refuge.



Students and professors from the University of Colorado at Denver Landscape Architecture program conduct a site visit in November 2014.

Rifle Hunting

During the scoping process, and as part of developing draft alternatives, we considered whether hunting with rifles might be a feasible and compatible outdoor recreational activity at the refuge. While hunting is a priority wildlife-dependent outdoor recreational activity for the Service and is encouraged throughout the Refuge System, the urban character of the refuge's vicinity requires a careful and very specific consideration of human safety. Accordingly, because of public safety concerns, we found this activity not to be compatible in any of the alternatives proposed during the 15- to 20-year timeframe for implementing the major actions of the final CCP.

Opening More Vehicular Access Points to the Refuge

During the scoping process we were asked to consider if more vehicular access points to the refuge might be necessary, feasible, and appropriate to fulfill the purposes of the refuge, to provide appropriate access to the refuge for the public, and to manage refuge resources. After this matter was discussed and studied by our planning team, we realized and agreed that the environmental and financial costs of creating and connecting other vehicular access points to the existing refuge roads is unacceptable and unnecessary to carry out the refuge's programs and to fulfill the refuge's purposes. Furthermore, we

believe that a road system that connects to other vehicular entrances in the refuge would end up being used as shortcuts by drivers during their commute around the refuge, thereby increasing vehicular traffic and the probability of wildlife–auto collisions and mortality. Consequently, the issue of more vehicular access points in the refuge was considered but eliminated from further consideration.

Taking Down the Refuge Perimeter 8-Foot Fence

Questions about the need for, the size of, and the configuration of the refuge’s perimeter fence were among the most commonly asked. Often, we also field comments about the uninviting look and feel of the fence and of how it makes people feel unwelcome, regardless that that is not our intent. We have been asked to consider removing the perimeter fence now that the Rocky Mountain Arsenal is no longer a military installation and is open to the public as a national wildlife refuge.

Many of the units of the Refuge System have no perimeter fence encompassing them, and many other units have shorter fences to keep domestic cattle and sheep out of refuge habitats, without impeding wildlife movements to and from the refuge. However, very few units of the Refuge System make use of 8-foot chain link, such as that surrounding and crossing parts of our refuge, as perimeter or internal fences. While most units of the Refuge System allow and encourage wildlife migration and movement between refuge habitats and adjacent lands, this tall fence is necessary to preclude the movement of large ungulates out of the refuge, as well as the influx of non-refuge deer from surrounding areas. The movement of large animals such as bison and deer onto neighboring high-speed roads or into residential, urban, and airport environment and facilities could be very dangerous for humans and animals alike. It is also important to exclude non-refuge deer that might be suffering from chronic wasting disease from entering the refuge and spreading this disease among the refuge deer herd.

Accordingly, removal of the fence was eliminated from further consideration for any of the alternatives of this EIS. However, we do consider different strategies for modifying the fence to maintain its important function while allowing access to refuge visitors and conveying a more inviting image.

2.10 Plan Amendment and Revision

The final CCP will be reviewed annually to assess whether there is any need for revision. A revision would be warranted if significant information becomes available, such as a change in ecological conditions. Revisions to the CCP and subsequent step-down management plans will be subject to public review and compliance with NEPA. At a minimum, this plan will be reevaluated every 5 years and revised after 15 years (table 6).

2.11 Funding and Personnel

Refuge budgets generally include ongoing operational funds for staff, maintenance, and utility needs. Funding for one-time projects (like road construction or major maintenance) is generally provided as needed or when available. Development of future employees is a priority, and student trainees, interns, and other entry-level positions will be used whenever possible. Due to budget cuts, no permanent fire personnel are currently funded at the refuge.

As part of the cleanup and restoration of the refuge, one-time funding was provided to undertake grassland restoration. This funding will be used to support seeding, irrigation, and invasive plant management through 2020.

In general, implementing the Urban National Wildlife Refuge Initiative and aspiring to become the most visited national wildlife refuge in the country will require some additional staff (particularly rangers and maintenance) and funding (tables 7 and 8). A major issue at present is that current staffing does not provide adequate security and visitor safety. A minimum of one additional law enforcement officer is needed to address refuge hours (12–15 hours per day, 7 days a week, 362 days a year) and to ensure appropriate coverage across the three units of the refuge complex.

2.12 Comparison of Alternatives

Table 9 provides a side-by-side comparison of alternatives A, B, C, and D.

Table 6. Stepdown plans from the Rocky Mountain Arsenal National Wildlife Refuge Comprehensive Conservation Plan.

<i>Name</i>	<i>Year</i>
Black-tailed prairie dog management plan	2013
Cultural resources management plan	2014
Fire management plan	2013 (revised)
Habitat management plan	2013
Habitat restoration plan	1999
Integrated pest management plan	2015
Inventory and monitoring plan	needed
Law enforcement plan	needed
Station safety plan	2013 (revised)
Visitor services management plan	needed
Water management plan	2014 (revised)

Table 7. Costs over 15 years to carry out the Rocky Mountain Arsenal National Wildlife Refuge Comprehensive Conservation Plan alternatives.

<i>Cost</i>	<i>Alternative A</i>	<i>Alternative B</i>	<i>Alternative C</i>	<i>Alternative D</i>
Budget Fiscal Year 2014	\$2,000,000	\$1,900,000	\$3,550,000	\$2,250,000
Salary expenditures	\$1,270,000	\$1,200,000	\$1,750,000	\$1,400,000
Non-salary expenditures	\$730,000	\$700,000	\$1,800,000	\$850,000
Staffing 2014 (FTE)				
Permanent full-time	15.5	13.5	20.5	17.5
Seasonal	4.0	3.0	6.0	4.0
Fire program	2.5	2.5	2.5	2.5
Restoration program	9.0	9.0	9.0	9.0



Louie Ocaranza / USFWS

Plowing

Table 8. Personnel to carry out the Rocky Mountain Arsenal National Wildlife Refuge Comprehensive Conservation Plan alternatives.

<i>Alternative A</i>	<i>Alternative B</i>	<i>Alternative C</i>	<i>Alternative D</i>
Management			
Refuge manager	Refuge manager	Refuge manager	Refuge manager
Deputy Refuge manager	Deputy refuge manager	Deputy refuge manager	Deputy refuge manager
None	None	Supervisory refuge officer	Supervisory refuge officer
None	None	Senior refuge officer	Senior refuge officer
Refuge officer	Refuge officer	(2) Refuge officers	Refuge officer
None	None	Outreach and partnership specialist	Outreach and partnership specialist
Administration			
Administrative officer	Administrative officer	Administrative officer	Administrative officer
Administrative support	Administrative support	Administrative support	Administrative support
Office clerk (1/2)	Office clerk (1/2)	Office clerk (1/2)	Office clerk (1/2)
Visitor services			
Visitor services manager	Visitor services manager	Visitor services manager	Visitor services manager
Environmental education specialist	Environmental education specialist	Environmental education specialist	Environmental education specialist
Park ranger, GS-9	Park ranger, GS-9	(2) Park ranger, GS-9	Park ranger, GS-9
(3) Park ranger, GS-7	Park ranger, GS-7	(2) Park ranger, GS-7	(3) Park ranger, GS-7
(2) Park ranger*	(2) Park ranger*	(4) Park ranger*	(2) Park ranger*
Operations and maintenance			
Refuge operations specialist, GS-11	Refuge operations specialist, GS-11	Refuge operations specialist, GS-12	Refuge operations specialist, GS-12
Fire management officer	Fire management officer	Fire management officer	Fire management officer
Range technician (fire)	Range technician (fire)	Range technician (fire)	Range technician (fire)
Range technician (fire*)	Range technician (fire*)	Range technician (fire*)	Range technician (fire*)
Equipment operator	Equipment operator	Equipment operator	Equipment operator
Maintenance worker	Maintenance worker	(2) Maintenance worker	Maintenance worker
(2) Maintenance worker*	None	(4) Maintenance worker*	(2) Maintenance worker*
Biology			
None	None	Assistant refuge manager	None
Refuge biologist	Refuge biologist	Refuge biologist	Refuge biologist
(2) Range technician*	(2) Range technician*	(2) Range technician*	(2) Range technician*
(2) Bio science technician*	(2) Bio science technician*	(2) Bio science technician*	(2) Bio science technician*
Restoration program (ends fiscal year 2020)			
Assistant refuge manager	Assistant refuge manager	Assistant refuge manager	Assistant refuge manager
GIS specialist	GIS specialist	GIS specialist	GIS specialist
Range specialist	Range specialist	Range specialist	Range specialist
Wildlife refuge specialist	Wildlife refuge specialist	Wildlife refuge specialist	Wildlife refuge specialist
Bio science technician	Bio science technician	Bio science technician	Bio science technician
Maintenance worker	Maintenance worker	Maintenance worker	Maintenance worker
(6) Tractor operator*	(6) Tractor operator*	(6) Tractor operator*	(6) Tractor operator*
Student trainees			
Student trainee, GS-5	To be determined	To be determined	To be determined
Student trainee, GS-4	To be determined	To be determined	To be determined

* Seasonal

Table 9. Side-by-side comparison of the management alternatives for the Rocky Mountain Arsenal National Wildlife Refuge, Colorado.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
Habitat Management Goal: Use an adaptive management framework to conserve, restore, and enhance the ecological integrity of the Front Range prairie communities, including wetlands, grasslands, native shrubs, and trees			
Restore habitat for grassland-dependent birds, bats, black-footed ferrets. Maintain a mosaic of wetland/riparian habitats for big brown bats. Implement riparian and prairie habitats recommendations from HMP addendum to support big brown bat populations. Discontinue use of bat boxes.	Same as A.	Same as A and B.	Same as A, B, and C.
Wildlife Management Goal: Balance and preserve wildlife species of concern through active management.			
Wildlife—Black-Footed Ferret			
BFF would not be reintroduced.	BFF would be reintroduced with legal safeguards for incidental take. Targeted outreach efforts to refuge neighbors. Restrict public access to northern half of RMA in support of BFF and bison populations and research activities. A live ferret exhibit will be built as part of an effort to interpret reintroduction of ferrets to the refuge.	Same as B, plus: Investigate opportunities for public to participate in BFF spotlighting surveys.	Same as C, plus: Establish BFF-specific partnerships and collaborative activities with CPW, Denver Zoo, BFF Center, etc. Develop partnerships with CPW to manage BFF on and offsite.
Wildlife—Surrogate Species			
Preserve population of black-tailed prairie dogs. Maintain bison herd at or below carrying capacity.	Same as A.	Same as A and B.	Same as A, B, and C.
Wildlife—Other Native Species			
Pronghorn would not be reintroduced until prairie is restored. Prairie chicken and sharp-tailed grouse are not likely to be reintroduced.	Conduct studies to determine if these species can be reintroduced. Reintroduce all native species that could become self-sustaining. Enforce seasonal closures to safeguard leks.	Same as B, plus: Reintroduce species to showcase native prairie ecosystems even if populations require further reintroductions.	Same as B, plus: Work with neighboring landowners to extend range of native species.
Visitor Services Goal: Foster the public's appreciation of natural resources and provide inclusive, high-quality, wildlife-dependent recreation, education and interpretation.			
Visitor Services—Hunting			
The refuge is closed to all hunting. No hunter education.	Use the refuge as a venue for hunter education, emphasizing hunting as a management tool. Partner with CPW and offer a hunting education course on site. Implement limited deer and dove hunt	Same as B plus: Develop archery range and offer archery instruction.	Same as C plus or except: Promote hunting opportunities throughout Colorado and the refuge system. No archery range would be developed. No hunting programs will be offered.

Table 9. Side-by-side comparison of the management alternatives for the Rocky Mountain Arsenal National Wildlife Refuge, Colorado.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
	ing program for youth and people with disabilities.		
Visitor Services—Fishing			
Maintain existing catch-and-release fishing from April to October (according to CO State fishing regulations). Maintain existing programs.	Same as A plus: Improve signage and facilities. Assess fishing satisfaction.	Same as B plus: Offer an annual fishing pass. Offer more introductory fishing classes/educational opportunities/clinics. Develop Lake Mary with more facilities, a high catch rate, and more user-friendly access.	Same as B plus: Explore raising fees and increasing stocking rates. Explore increasing fishing days/hours. Promote fishing opportunities throughout the refuge system and Colorado. Partner with others to implement fishing improvements and expanded programming (such as fly fishing demonstration, fly tying, fish identification).
Visitor Services—Wildlife Observation and Photography			
Maintain self-guided auto tour, nature trails, and wildlife viewing blind with seasonal closures to protect sensitive wildlife. Continue limited issuance of special use permits for commercial photography.	Same as A plus: Add wildlife viewing facilities and trails at Rattlesnake Hill and Wildlife Watch. Improve accessibility of existing facilities. Reintroduction of black-footed ferrets will provide new viewing opportunities.	Same as B plus: Construct accessible new viewing area, four viewing overlooks, and new trails. Develop partnerships to lead more programs and tours. Improve signage and interpretive materials and expand law enforcement to manage use and minimize impacts on habitat.	Same as B plus: Construct new observation facilities (as described for C). Offer more commercially and partner-led guided tours and/or programming. If native species (e.g. prairie chicken, pronghorn, sharp-tailed grouse) are introduced, explore potential to offer wildlife viewing and lek tours led by a commercial tour company.
Visitor Services—Environmental Education and Interpretation			
Continue to provide on- and offsite environmental education programs based on staff availability. Environmental Education curriculum is available for teachers. Continue interpretive tours and programs; update interpretative materials as funding allows.	Same as A, plus: Add environmental education programming and curricula covering black-footed ferrets. Implement Rhythms of the Refuge, offering teacher resources and distance learning.	Same as B, plus: Explore nontraditional methods. Use partnerships and concessionaires for environmental education programs and summer camps. Upgrade and/or replace the Contact Station to serve as an improved venue for educational programming. Construct new Environmental Education Center. Deliver more programs to neighboring communities, partnering with parks, libraries, recreation centers, and schools. Develop refuge artist program. Create refuge-inspired murals.	Same as B, plus: Expand environmental education programming for youth and adults. Explore partner- and concessionaire-led camps, career experience, summer intern, and vocational programs for local community youth. Explore hosting of adult forums with invited speakers and participation fees. Explore onsite living history program in collaboration with partners with the Egli House as venue.

Table 9. Side-by-side comparison of the management alternatives for the Rocky Mountain Arsenal National Wildlife Refuge, Colorado.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
Communications and Outreach Goal: Through effective communication and innovative technology, engage the public and stakeholders to help them better understand the importance of natural resources, operations, and history of the refuge complex so that they are inspired to participate in and support management and restoration efforts.			
Communications and Outreach—Audiences			
Continue outreach to local communities. Participate in Refuge Day, Bass Pro Fishing Classic, CO Get Outdoors Day, Aurora Youth Water Festival, Barr Lake Birding Festival, and other events.	Increase public outreach to increase visibility and overcome negative perceptions.	Same as B plus: Target nontraditional visitors and outlying community residents. Improve understanding of demographics of metropolitan area to inform outreach efforts. Develop a communications plan to reach youth and nontraditional and underserved groups.	Same as B plus: Target birders, history enthusiasts, and international visitors. Develop communications plan for entire refuge complex.
Communications and Outreach—Emphasis of Outreach Message			
Continue to support Urban Wildlife Conservation Program. Participate in special events and career development programs for local students.	Same as A, plus: Focus on safety concerns, inviting visitors, and explaining wildlife and habitat resources.	Same as B plus: Increase visibility. Distinguish between city park and urban refuge. Emphasize how the refuge benefits and serves the community: Health and school performance benefits. Improved air and water quality. Benefits for future generations. Improved access and expanded hours of operation.	Same as B plus: Emphasize conservation and site’s transformation. Emphasize site’s history. Promote the entire refuge complex and other prairie sites. Promote improved regional access to the refuge.
Communications and Outreach—Tools and Approaches			
Maintain refuge Web site, Wild News Quarterly, and social media platforms. General brochure, rack card, and fishing brochure (in English and Spanish) are available. Brochures for trails and auto tour are in development.	Same as A, plus: Increase cross promotion with partners. Share website link with partnering agencies and groups and encourage them to link to RMA. Develop bilingual resources: refuge Web site, signs, and brochures. Increase use of existing outlets and media.	Same as B, plus: Significantly increase use of existing outlets and media. Develop new outlets to reach area residents. Explore developing half- or full-day refuge programs. Use latest technology to connect with broad audiences. Develop campaign to promote our premiere urban refuge and the opportunities it presents to connect people to nature.	Same as C, plus: Engage Colorado Parks and Recreation Association (CPRA) to develop promotional package; participate in CPRA state conference. Engage Channel 8, Denver Business Bureau, DIA, and Visit Denver to expand outreach. Use refuge Web site as a clearinghouse for regional events/activities. Employ social marketing. Encourage visitors to use social media to share wildlife sightings and plant discoveries. Solicit partners/volunteers to post regularly on Facebook.

Table 9. Side-by-side comparison of the management alternatives for the Rocky Mountain Arsenal National Wildlife Refuge, Colorado.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
<p>Recruit interns to explore technologies and outreach strategies.</p> <p>Use social media to share refuge images and video.</p> <p>Translate Web site into multiple languages.</p>			
<p>Partnerships: Seek and foster strong partnerships to support research and management, enhance wildlife-dependent recreation, and promote appreciation of nature.</p>			
<p>Continue regional trails partnership (e.g., Rocky Mountain Greenway, Sand Creek Greenway) to form trail system connecting refuge with Two Ponds and Rocky Flats NWRs.</p> <p>Friends of Front Range Wildlife Refuges operates Nature’s Nest bookstore in the Visitor Center.</p> <p>Continue partnership with Commerce City Parks and Recreation and Bass Pro Shops for annual Fishing Frenzy.</p> <p>Coordinate with City and County of Denver on Urban Bird Treaty.</p> <p>Continue employing Arrupe High School student one day/week.</p>	Same as A.	<p>Same as A plus:</p> <p>Increase partnerships throughout Denver and surrounding communities to assist with outreach, including Regional Transportation District, Denver Regional Council of Governments, and commercial partners.</p> <p>Encourage community partners to use refuge as a resource for educational programming as well and health/wellness activities.</p> <p>Use partnerships to build physical linkages between communities, regional trails, and the refuge.</p> <p>Focus on partnerships to reach nontraditional visitors.</p> <p>Increase use of Citizen Science and collaboration with local schools to work on restoration.</p>	<p>Same as C plus:</p> <p>Engage partners to expand visitor use programming: day camps, Master Naturalist Program, interpretive guide training, Backyard Habitat, photo tours and classes, advanced birding, fishing clinics. Increase partners’ autonomy in programming.</p> <p>Expand partnerships to conservation organizations, local governments and agencies, and private companies.</p> <p>Establish “prairie coalition” to cross-promote programming, activities, and research throughout the Front Range.</p> <p>Develop BFF-specific partnerships with CPW, Denver Zoo, BFF Center.</p> <p>Develop partnerships with other states and nations for special-status species issues (e.g., Swainson’s hawk research and management in Argentina).</p> <p>Develop two large new special events with partners.</p> <p>Develop partnerships for access and international outreach with Fast Tracks, CDOT, DIA, RTD. Develop partnerships with FHWA, NPS, USFS, USFWS Region 6 Regional Office.</p>
<p>Cultural Resources Goal: Protect artifacts and interpret the archeological, agricultural, military, and industrial histories of the refuge complex and the story of its restoration in order to connect visitors and the community to the area’s past.</p>			
Continue cultural resource review for ground-disturbing activities.	Same as A.	Same as A and B, plus: Additional storage in existing buildings.	Same as C, plus: Establish offsite WWII/Cold War museum owned

Table 9. Side-by-side comparison of the management alternatives for the Rocky Mountain Arsenal National Wildlife Refuge, Colorado.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
<p>Avoid disturbance of cultural resources.</p> <p>Continue law enforcement monitoring of sensitive sites.</p> <p>Care for and inventory artifacts stored at refuge.</p> <p>Continue protection of historic buildings, including stabilization of Egli House.</p> <p>Continue interpreting cultural resources on bus tour.</p> <p>Explore deaccession of some artifacts.</p>		<p>Additional display of WWII and Cold War items at existing refuge facilities.</p> <p>Develop partnerships with Native American community to interpret prehistoric landscape.</p> <p>Fully restore Egli House exterior.</p> <p>Increase guided interpretation of cultural resources suited for outdoor storage.</p>	<p>and operated by non-Service partner.</p> <p>Fully restore exterior and interior of the Egli House for reuse and interpretation.</p> <p>Permit and encourage living history interpretation events.</p>
<p>Research and Science Goal: Use science and promote research to advance the understanding of natural resource functions and management within the complex and beyond.</p>			
<p>Research and Science—Research</p>			
<p>Continue trapping and banding burrowing owls to support research on migratory pathways.</p> <p>Continue supporting other short-term research opportunities as they arise.</p>	<p>Same as A, plus:</p> <p>Collaborate with BFF Center on reintroduced BFF population.</p>	<p>Same as B, plus:</p> <p>Evaluate prairie dog densities in context of BFF.</p> <p>Use public participation and social media to acquire and collate data supporting refuge management.</p>	<p>Same as C, plus:</p> <p>Increase collaborative projects, where other researchers use refuge.</p> <p>Provide facilities to support BFF research.</p> <p>Research prehistoric use of First and Second Creek overlooks.</p> <p>Increase cooperation with universities and other higher education institutions.</p> <p>Study response of grassland birds and pollinators to prairie restoration.</p> <p>Study response of coyotes to prey base and stressors.</p>
<p>Research and Science—Monitoring and Inventory Programs</p>			
<p>Trap and band burrowing owls.</p> <p>Bald eagle winter roost surveys and nest counts.</p> <p>Raptor nest monitoring. (Swainson’s hawk and burrowing owl).</p> <p>Assess fish populations using electrofishing and gillnetting.</p> <p>Conduct fall deer census.</p> <p>Conduct fall bison roundup.</p> <p>Monitor native and invasive vegetation, especially at restoration sites.</p>	<p>Same as A, plus:</p> <p>Develop an Inventory and Monitoring Plan.</p> <p>Recommence water quality monitoring.</p> <p>Adopt findings of Water Management Plan.</p> <p>Reestablish yearly monitoring of cultural resource sites.</p> <p>Reestablish visitor use satisfaction surveys.</p> <p>Monitor reintroduced species for success.</p> <p>Use hand-held electronic devices for data collection.</p>	<p>Same as B, plus:</p> <p>Delegate some monitoring and data gathering activities to volunteers and partners.</p> <p>Develop Citizen Science support for BFF and bald eagle monitoring.</p> <p>Increase monitoring of visitation.</p> <p>Establish neighbor satisfaction surveys.</p>	<p>Same as C, plus:</p> <p>Monitor spread and extent of prairie dog populations jointly with DIA and APHIS.</p> <p>Monitor research efforts identified for this alternative.</p>

Table 9. Side-by-side comparison of the management alternatives for the Rocky Mountain Arsenal National Wildlife Refuge, Colorado.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
Band 200 mourning doves. Support Citizen Science participation in Great Backyard Bird Count. Conduct Christmas Bird Count. Conduct spring and fall bird counts.			
Research and Science—Citizen Science Projects			
Christmas Bird Count. Great Backyard Bird Count. Spring and fall bird counts.	Same as A, plus: Increase extent of existing bird counts. Implement Big Sit bird count.	Same as B, plus: Create additional Citizen Science opportunities. Track phenological characteristics associated with BFF and bald eagle monitoring. Participation in BFF spotlighting surveys.	Same as C, plus: Link Citizen Science opportunities with projects throughout refuge complex and partners' sites.
Research and Science—Climate Change			
No active climate change research undertaken on the refuge.	Initiate monitoring and research of phenological characteristics of various species relevant to climate change.	Same as B.	Same as B, plus: Collaborate with neighbors, other agencies, and partners (e.g., DIA, CDPHE, Regional Air Quality Council) on air quality monitoring and data collection.
Research and Science—Social Science, Social Media, and Emerging Technologies			
No active research currently undertaken on the refuge.	Same as A.	Consider installation of remote cameras to monitor and provide Web-based public access to refuge fauna (e.g. bald eagles, BFF). Use emerging technologies and social media to engage visitors and aid in refuge management and wildlife tracking.	Same as C, plus: Coordinate data collection and modeling platforms with refuge partners and other agencies. Share refuge wildlife data (e.g., bison, bird bands) with more partners.
Infrastructure and Operations: Effectively use funding, staff, partners, volunteers, and equipment to restore and manage refuge complex habitats, conduct programs, and improve and maintain all necessary infrastructure.			
Infrastructure and Operations—Staff and Funding			
Budget: \$2,000,000 Staffing: Permanent full-time 15.5 Seasonal 4.0 Fire program 2.5 Restoration 9.0 See table 8 for specific staff allocations.	Budget: \$1,900,000 Staffing: Permanent full-time 13.5 Seasonal 3.0 Fire program 2.5 Restoration 9.0 See table 8 for specific staff allocations.	Budget: \$3,550,000 Staffing: Permanent full-time 20.5 Seasonal 6.0 Fire program 2.5 Restoration 9.0 See table 8 for specific staff allocations.	Budget: \$2,250,000 Staffing: Permanent full-time 17.5 Seasonal 4.0 Fire program 2.5 Restoration 9.0 See table 8 for specific staff allocations.

Table 9. Side-by-side comparison of the management alternatives for the Rocky Mountain Arsenal National Wildlife Refuge, Colorado.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
Infrastructure and Operations—Volunteer Groups and Programs			
Approximately 80 volunteers: Visitor Center front desk, interpretive programs and tours, maintenance, surveys, special events, pollinator garden.	Same as A, plus: Increase volunteers. Develop reliable core group. Support Eagle Scout projects and engage other Scout volunteers.	Same as B, plus: Increase volunteer projects. Expand volunteer base by recruiting from neighboring communities and metropolitan area. Encourage Denver Parks and Recreation to host a program on the refuge. Increase offerings of drop-in programs. Increase large volunteer projects and events.	Same as C, plus: Build the largest volunteer program of the three action alternatives. Develop system for sharing volunteers among three complex refuges and partner groups.
Infrastructure and Operations—Facilities			
Existing facilities: Visitor Center, Contact Station, three information kiosks, two amphitheaters, fee station, wildlife viewing blind, pollinator garden. Proposed: new administration building.	Same as A, plus: Develop site plan for new administration complex. Remove unused facilities and replace temporary bunkhouses. Reduce light and sound pollution in all future designs.	Same as B, plus: Expand restrooms, shade structures, tables. Develop facilities for large family gatherings. Replace Contact Station with Environmental Education Center. Administration building would be moved to Environmental Education Area. Install new viewing platforms, observation decks, and other wildlife observation and photography facilities. Reopen and improve Wildlife Watch. Establish bison viewing area outside refuge. Construct new overlook at Lower Derby Lake. Construct more pullouts along Wildlife Drive. Build interpretive kiosks at new entrance points. Install viewing blinds if grouse establish leks. Improve and interpret bunker on Wildlife Drive.	Same as B, plus: Develop food concessions and partnerships with food trucks. Rehabilitate facilities to interpret cultural resources. Rehabilitate Building 112 for interpretive history exhibits or convert into Cold War Museum. Improve and interpret bunker on Wildlife Drive. Identify and memorialize POW/internment camp. Memorialize Ivory Crush and continue message regarding wildlife trade. Administration building would be moved to Partner Village.
Infrastructure and Operations—Energy Transmission Towers			
Continue to increase energy efficiency and reduce the carbon footprint of operations. Underground or relocate power lines when redeveloping. Coordinate with army for removal of electrical substation.	Same as A.	Same as A, plus: Eliminate transmission towers and lines. Expand PV solar array. Incorporate sustainable practices when developing or renovating infrastructure.	Same as C.

Table 9. Side-by-side comparison of the management alternatives for the Rocky Mountain Arsenal National Wildlife Refuge, Colorado.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
Infrastructure and Operations—Refuge Signs			
Entrance signs at Main and Havana gates; guide and directional signs throughout refuge; interpretive signs at information kiosks at Contact Station and Lake Mary. All signs would be maintained.	Same as A.	Same as B, plus: Coordinate with Commerce City to improve primary entrance. Create refuge monument sign to attract visitors. Coordinate with neighbors to develop unified signage plan. Use perimeter fencing as communication medium. Add way-finding and interpretive kiosks to support transportation improvements.	Same as C, plus: Develop signage to promote other regional opportunities.
Infrastructure and Operations—Water-Control Infrastructure and Water Rights			
Upper Derby, Lower Derby, Lake Ladora, and Lake Mary dams are currently owned and operated by U.S. Army. Havana Pond dam is owned and operated by City of Denver and Urban Drainage and Flood Control District. The refuge will not accept transfer of the U.S. Army dams until repairs are complete. Havana Pond is being repaired.	Same as A.	Same as A and B.	Same as A, B, and C.
Infrastructure and Operations—Fencing			
No change to existing fencing.	Develop fencing and signage design and material standards across complex.	Same as B, plus: Construct new gateway arch at main public gate. Extend branding across complex. (moderate) Install split-rail fence to establish boundaries. Set back wildlife fence from roads. Identify where fence could be opened to foot traffic.	Same as C, plus: Improve appearance and uniformity of fencing and access points. Extend branding across complex and to adjacent jurisdictions/landowners. Identify additional access points to promote regional connections.
Infrastructure and Operations—Hours of Operation			
Normal hours sunrise to sunset.	Same as A.	Same as A.	Same as A.
Infrastructure and Operations—Other Operational Topics			
UCFCD to include refuge in alert system for emergencies such as flood threats. Partner with FHWA to	Same as A.	Same as A and B.	Same as A, B, and C.

Table 9. Side-by-side comparison of the management alternatives for the Rocky Mountain Arsenal National Wildlife Refuge, Colorado.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
investigate vulnerability of infrastructure to extreme weather events.			
Access and Transportation: Support the improvement of suitable access to the refuges, develop sustainable transportation options, and provide more connections within the refuge complex.			
Access and Transportation—Points and Types of Access			
Single visitor access point at Prairie Gateway. Automobile, bus, and pedestrian modes permitted. Bicycles allowed from main gate to Visitor Center.	Same as A, plus: Enhance/improve main gate. Maintain or reevaluate three employee entrances.	Same as B, plus: Add pedestrian and bicycle access points to Henderson Hill overlook/trail (north boundary). Add southeast viewing access. Work with RTD to connect neighborhoods to refuge via public transit system. Allow cross-country skiing, jogging, and expanded bike access. Consider bike sharing, commercial bus, addition of Service-owned bus with bike racks.	Same as C, plus: Add connections to Rocky Mountain Greenway and promote connectivity among three refuges. Create trail connection to Fast Tracks Pena station. Improve connections between DIA and refuge. Enhance bike-sharing system.
Access and Transportation—Way-Finding and Sign Plan			
Continued use of existing signage.	Improve navigation and way-finding. Incorporate positive messaging into signage. Provide explanations for road and area closures. Update refuge maps.	Same as B, plus: Coordinate with neighbors and partners to develop unified signage and way-finding.	Same as B.
Access and Transportation—Roads and Related Infrastructure			
Maintain current road system.	Discontinue maintenance of and remove some section line roads. Expand Wildlife Drive for self-guided opportunities. Formalize information gathering for road inventory program.	Same as B, plus: Improve multiple inter-sections. Modify Texas Crossing on Wildlife Drive. Incorporate bike infrastructure into road system. Improve signage.	Same as B and C, plus: Wildlife Drive (southern portion)—stripe bike lanes and off-street path Wildlife Drive (northern portion)—stripe for two-way traffic; add pullouts, traffic control, speed bumps.
Access and Transportation—Legacy Loop			
Open to the public.	Same as A, plus: Improve way-finding and address safety issues. Improve map and signage. Pave remaining eastern section.	Same as B, plus: Add additional pull-outs. Add paved, detached, ADA-compliant bike-pedestrian path.	Same as C.

Table 9. Side-by-side comparison of the management alternatives for the Rocky Mountain Arsenal National Wildlife Refuge, Colorado.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
Access and Transportation—Wildlife Drive			
Currently closed to visitors other than Service-led tours.	Same as A, plus: Provide bus service on weekends (reservation required).	Expand scheduled bus tours (not reservation only) in coordination with RTD.	Same as C, plus: Open drive to two-way public traffic.
	Develop opportunities for self-guided tours.	Open drive to one-way public traffic. Build pull-outs Improve signage and way-finding. Improve Texas Crossing for safe public use.	
Access and Transportation—Trail System			
Continue to maintain 10 miles of trails. Repair sections of trails, including Rattlesnake Hill, currently closed due to flood damage. Continue to allow snow-shoeing on existing trails.	Increase interpretation and accessibility on existing trails. Improve and build trail connections with regional trails. Complete Perimeter Trail.	Same as B, plus: Extend trail system. Add trailheads and access points (e.g., Wildlife Watch, Henderson Overlook). Open some roads and trails to bicycle access. Coordinate with stakeholders and adjacent landowners to manage bike and pedestrian access on Perimeter Trail.	Same as C, plus: Develop more extensive trail system. Connect Rocky Mountain Greenway Trail with First Creek and Second Creek Trails. Improve signage. Promote trail linkages.

2.13 Consistency with Refuge Management Goals

In the following sections we describe how each alternative meets the goals we developed for the refuge. Table 10 summarizes this discussion.

Habitat Management

Goal: Use an adaptive management framework to conserve, restore, and enhance the ecological integrity of Front Range prairie communities, including wetlands, grasslands, native shrubs, and trees.

In all the alternatives, we propose to base all our habitat management actions on the HMP, which we finalized in 2013. Our habitat management aims under the HMP are to:

- Promote successful long-term establishment and maintenance of seeded restoration sites,

as well as existing native prairies and shrublands, to provide habitat for the resources of concern.

- Maintain the importance of the refuge as a priority nesting site for burrowing owls along the Front Range of Colorado.
- Preserve a historically representative population of black-tailed prairie dogs.
- Provide additional nesting opportunities for resources of concern, including relevant grassland-dependent bird species exhibiting population declines.
- Use prescribed fire and non-fire treatments to maintain or improve refuge habitats and to manage wildland fuels to protect values at risk.
- Maintain a bison population that contributes to the Department of the Interior's Bison Conservation Initiative and helps maintain the structure and composition of native and

Table 10. How the actions in the alternatives meet the goals for the Rocky Mountain Arsenal National Wildlife Refuge, Colorado.

Goals	How the alternatives adhere to refuge goals*			
	A	B	C	D
Habitat management	▲	▲	▲	▲
Wildlife management	△	▲	▲	▲
Visitor Services	△	△	▲	▲
Communications and outreach	▼	▼	▲	▲
Partnerships	△	△	▲	▲
Cultural resources	△	△	▲	▲
Research and science	△	▲	▲	▲
Infrastructure and operations	△	△	▲	▲
Access and transportation	▼	▼	▲	▲

* Ratings note that an alternative satisfies the goal ▲, partially satisfies the goal △, or does not satisfy the goal ▼

restored prairies necessary to support priority grassland-dependent bird species.

- Provide habitat in the refuge's Environmental Education Zone for neotropical migratory bird species that are losing suitable stopover areas to urban development in the Denver Metropolitan area.
- Provide long-term quality nesting and roosting habitat for bald eagles.
- As one of the Nation's premier urban national wildlife refuges, the Rocky Mountain Arsenal NWR offers a variety of distinctive public education opportunities, including how one of the most environmentally contaminated sites in the United States is being restored to a native prairie ecosystem.

All four alternatives adhere closely to the refuge's habitat management goal.

Wildlife Management

Goal: Balance and preserve wildlife species of concern through active management.

All four alternatives entail similar wildlife management actions. The most salient difference is that only the three action alternatives propose reintroduction of the endangered black-footed ferret and the consideration to reintroduce, under various circumstances and to achieve various ends, prairie chicken,

sharp-tailed grouse, and pronghorn if doing so is deemed feasible and ecologically sound.

Under all the alternatives, we would continue to implement the HMP, which instructs us to maintain healthy wildlife communities in a manner consistent with the site's historical and cultural background. Consistency with the historical and cultural background refers to maintaining existing New Mexico locust thickets, old farmstead windbreaks and other planted trees, cottonwood galleries, created wetlands and reservoirs, and restored grasslands.

Under all the alternatives, we would restore and maintain habitat using tools such as prescribed fire. Similarly, we would continue to provide sites for nesting burrowing owls, as well as nesting and roosting habitat for bald eagles. We would also provide appropriate habitat for neotropical migratory birds in our refuge's Environmental Education Zone. Furthermore, we would provide indigenous bat populations with a mosaic of wetland and riparian foraging habitat, while discontinuing use of so-called bat boxes.

Under all the alternatives we would maintain and expand the refuge's bison population to help maintain the structure and composition of native and restored prairies necessary to support priority grassland-dependent bird species. We would manage bison populations at or below carrying capacity. We have determined that by expanding the range of the bison within appropriate refuge habitats we can adequately maintain a bison herd of 110–180 animals, but the herd should not exceed 209 animals.

Under all the alternatives, we would continue to manage the refuge's historically representative prairie dog populations in accordance with our approved 2013 Black-Tailed Prairie Dog Management Plan to sustain native grasslands and associated migratory birds.

The three action alternatives, because of their inclusion of reintroduction of native species, adhere more closely to the wildlife management goal for the refuge than does the no-action alternative.

Visitor Services

Goal: Foster the public's appreciation of natural resources and provide inclusive, high-quality, wildlife-dependent recreation, education, and interpretation.

Under all the alternatives we would emphasize public safety and would continue to foster the public's appreciation for natural resources and provide opportunities for the public to engage in the Congressionally identified compatible wildlife-dependent recreational opportunities: fishing, hunting, wildlife observation, photography, environmental education, and interpretation.

However, alternatives A and B would only partially adhere to this goal because neither would increase public access and both would allow for only a modest increase in transportation options. These modest increases would likely result in only modest increases of public participation in wildlife-dependent recreational opportunities. Under both alternatives, most of the refuge would remain closed to the public, except when accompanied by refuge staff.

Both alternatives C and D would adhere more closely to this goal because they include greater visitor access and transportation options. Alternative C would focus on providing visitor services that would be popular with our neighbors and the greater metropolitan community, such as hunting, hunting instruction, more fishing classes, and catch opportunities. Programs under alternative C would be targeted to neighboring communities and would include partnering libraries, parks, and schools and could explore nontraditional methods and opportunities such as refuge artists that are likely to inspire urban youth. Alternative D would partner with others who already offer programming and is more likely to result in offsite education and visitation. Some of the programs would be geared toward local visitors as they would in alternative C.

Communications and Outreach

Goal: Through effective communication and innovative technology, engage the public and stakeholders to help them better understand the importance of natural resources, operations, and history at the refuge complex

so that they are inspired to take part in and support management and restoration efforts.

Our existing and proposed visitor services programs aim to help refuge visitors understand the importance of nature, and to instill in them an appreciation for the conservation of our natural and cultural resources. However, to achieve this important objective, we must first succeed in reaching out to and communicating with the diverse people in our surrounding communities and beyond and invite them to visit the refuge. Alternatives A and B would not satisfy the outreach component of this goal because of the lack of sufficient dedicated resources. Because alternative C focuses to a greater degree on involving local youth and adult visitors, it would meet the outreach component of the goal to a greater degree than any other alternative. Alternative D may reach a more diverse audience, but that audience would be widespread and not as likely to be unaware of the importance of natural resources. Alternative C would also focus more on the refuge than the entire refuge system or on resources at partner agencies. Both C and D would likely inspire visitors to take part or support RMA NWR management and restoration efforts.

Partnerships

Goal: Seek and foster strong partnerships to support research and management, enhance wildlife-dependent recreation, and promote an appreciation of nature.

We propose to maintain all the partnerships that we currently have with various organizations and agencies. These partnerships are extremely important to us as they allow us to carry out all necessary management and visitor services programs and activities that aim to fulfill the purposes for which this refuge was established. Under alternative A we propose no changes to the current types, number, or purpose of our partnerships. Under alternative B we propose a modest expansion in our partnerships, mostly as they relate to the reintroduction of black-footed ferrets and the management of the local population. Accordingly, both of these alternatives would partially adhere to this goal. Under alternatives C and D, we are proposing to pursue the same partnerships as under alternative B and to explore other partnership opportunities that can support necessary research and management, as well as the expansion and promotion of wildlife-dependent recreational opportunities. Alternative D focuses on adding or expanding partnerships but may not achieve this goal as well as alternative C because it would dilute

staff time to a much greater degree. Under alternative C, staff would be better able to enrich current partnerships as well as build new ones such as partnerships supporting environmental education for community members. Both alternatives C and D adhere closely to the partnership goal.

Cultural Resources

Goal: Protect artifacts and interpret the archeological, agricultural, military, and industrial histories of the refuge complex and the story of its restoration in order to connect visitors and the community to the area's past.

Under all alternatives, we would continue to adhere to cultural resource laws and avoid adverse effects on important resources.

With existing staff resources, it would be difficult for us to increase our protection, monitoring, outreach, interpretation, or partnership efforts beyond the basic adherence to cultural resource laws that is within the capacity of refuge staff and Service cultural resources staff. Without new resources, our staff would have to leave important historical resources—especially from the World War II and Cold War eras—in storage, with little possibility of partnering with appropriate groups and agencies to properly house, curate, and interpret these valuable artifacts for future generations. Consequently, alternatives A and B would only partially adhere to this goal.

In part because of the increased resources proposed under alternatives C and D, these alternatives would enable the staff to increase outreach and partnership efforts to find suitable groups and agencies that could properly house, curate, and interpret these valuable artifacts for future generations. Alternative C has been modified to include both exterior and interior restoration of the Egli House as proposed in alternative D. Accordingly, alternatives C and D would result in the best protection of historical and cultural resources and so better adhere to this goal.

Research and Science

Goal: Use science and promote research to advance the understanding of natural resource functions and management within the refuge complex and beyond.

It is Service policy and our practice at the refuge to base all our management decisions on science. Under all four alternatives, we would continue to use science as a matter of course. However, under alternative A, we propose to continue with the current

opportunistic approach to research, because our existing resources and programs constrain us from promoting specific research. Accordingly, alternative A only partially adheres to this goal. However, all three action alternatives propose a proactive approach to the pursuit of specific research to advance our understanding of how best to manage all the units of the refuge complex. Consequently, all three action alternatives would adhere closely to our stated goal for research and science. Because alternative D emphasizes collaboration with other refuges or agency partners and wider coordination of research and data collection and sharing, it has the potential to achieve this goal to a greater degree than other alternatives. However, because the redirection of staff time and attention away from the refuge has the potential to dilute ongoing research and science on the refuge, alternative C would better advance the understanding of functions and management within the refuge complex.

Infrastructure and Operations

Goal: Effectively use money, staff, partners, volunteers, and equipment to restore and manage refuge complex habitats, conduct programs, and improve and maintain all necessary infrastructure.

The refuge's staff, funding, and infrastructure are essential to carry out all necessary management and visitor services programs and activities to fulfill the purposes for which the refuge was established. Under alternatives A and B we propose to maintain the current types, number, and configuration of infrastructure and equipment and to maintain staff and funding levels. However, the existing refuge headquarters and staff offices and facilities are not the most conducive to welcoming the public, our partners, and cooperators. Consequently, both alternatives would only partially adhere to this goal. Under alternatives C and D, we propose many advantageous changes to the headquarters, fencing, and other infrastructure that we believe would maximize our resources and allow us to more effectively interact with visitors and partners. Accordingly, both alternatives C and D would adhere closely to this goal. Alternatives C and D differ in their focus, with C offering substantially more opportunities to observe wildlife using new facilities like pullouts, overlooks, viewing platforms, and so on.

Access and Transportation

Goal: Support the improvement of suitable access to the refuges, develop sustainable transportation options, and provide more connections within the refuge complex.

A desire for increased access and transportation options to and within the refuge was among the most numerous comments we received from partners, neighbors, and the public. If our refuge is to remain relevant in the context of a twenty-first-century metropolitan setting, we must find ways to provide greater refuge access and to expand and facilitate suitable transportation options for our visitors and staff.

Under alternative A we propose no changes to the existing level of access and transportation options to and within the refuge. Under alternative B we propose to maintain the existing levels, means, and configuration of access points to the refuge, and only minimal expansion of the transportation options and connections within the refuge complex. Accordingly, neither alternative A nor B would adhere to the goal we have set for future conditions of the refuge. Under alternatives C and D we propose new points and types of access to the refuge, as well as a considerable expansion and reconfiguration of the refuge's transportation options. Alternative D includes most of the trails, roads, and transportation options in C, but also proposes creating trail connections to areas outside the refuge, as well as opening the internal Wildlife Drive to two-way traffic. These measures do help alternative D more fully meet this goal, but they also redirect staff time away from habitat or wildlife management and potentially the quality of the visitor experience at the refuge to managing security and traffic and maintaining roads and trails. Accordingly, both alternatives C and D would adhere closely to this goal.

2.14 U.S. Fish and Wildlife Service Preferred Alternative

The preferred alternative is defined (by the President's Council on Environmental Quality, CFR 1502.14 (e)) as the alternative "which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors" (Q4a). The preferred alternative can be the same or different from the proposed action.

The refuge planning team met in July 2015, to reconsider the proposed action, alternative C, in the light of public and agency comments on the draft CCP and EIS. The refuge held four public workshops and received 11 pieces of correspondence (letters or emails). In total, these documents and the workshops resulted in 123 comments. Agencies are required to respond to "substantive" comments, or comments that question facts, suggest new elements of alternatives, or are relevant to the identification and implementation of a selected alternative. Many of the 123 comments received were not substantive and eliminated from the comment/response section of chapter 5 of this final EIS. Although the indication of agreement or non-agreement with the identified proposed action is not considered substantive, it is worth noting that all but one commentor indicated support for alternative C. The other questioned why alternative D would not be a better choice, given its lower cost and regional scope.

The refuge planning team considered these comments and reviewed the discussion of the degree to which alternatives met goals in section 2.13 above before meeting to discuss a preferred alternative. These goals serve as summaries of relevant pieces of the refuge's "statutory mission and responsibilities." Alternatives A and B do not fully meet the goals and were eliminated as possible options for the preferred alternative. Although both alternatives C and D fully meet each of the goals originally identified by the team as important, the team was concerned that implementing alternative D would redirect focus away from the refuge itself before it could become the "premier urban refuge" the team knows it could be. In addition, alternative C has more onsite facilities and programming for visitors and focuses its communications, outreach, and partnerships on local residents or organizations than D. These residents are urban and are underserved by the Service; reaching out to them is most consistent with the Service's Urban Wildlife Conservation Program discussed in the draft CCP and EIS.

Alternative C would be more expensive than D; this is because D would count more heavily on volunteers and agency partners outside the refuge to educate the public about refuge resource protection and restoration efforts. Alternative C would fully be a Service-funded and -controlled effort.

Up to this point in time, the focus at the refuge has been to complete clean-up of the site to make it safe for visitors. This is the first large-scale planning effort the Service has conducted here. At this time in the refuge's history, the team believes funds, control, and staff focus should be on the refuge itself rather than the region. The broadening of the refuge's research and education programs to the region is something the team believed might make an excellent

second “phase” of management and be an appropriate direction in its next CCP. “We can’t make the refuge a spot for international visitors until it is the best at being a location destination” was a sentiment expressed by the team.

For these reasons, alternative C was selected as the preferred alternative.

The team did make minor modifications to alternative C to incorporate desirable actions from alternative D that remained consistent with the Urban Refuge theme, and to refine it slightly. These actions include restoring the interior of the Egli House (in addition to the exterior, already in C); phasing out staff use of gates at the west and south entrances to the refuge and possibly eliminating roads that lead to them (unless they are needed for emergency access);

eliminating bison roundup viewing stands (as viewing would be blocked by the walls in the roundup facility itself); and adding two law enforcement officers (to total three) to maintain safety for visitors and protection for wildlife as visitation grows.

2.15 Comparison of Environmental Consequences

Table 11 summarizes the environmental consequences for all alternatives.

Table 11. Comparison of environmental consequences for the Rocky Mountain Arsenal National Wildlife Refuge CCP and EIS alternatives.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
Physical Environment			
Physical Environment—Geology and Soils			
Minor, localized, short-term adverse effects from construction of bison fences.	Same as A.	Same as A.	Same as A.
Moderate beneficial effects on prairie restoration from bison presence.	Same as A.	Same as A.	Same as A.
Adverse effects on vegetation from visitors parking off roads because of shortage of designated parking areas.	Same as A.	Reduced effects because of construction of eight new modest-sized parking areas and added pull-outs.	Same as C.
Moderate short-term adverse and moderate beneficial long-term effects on soil erosion from breaching Upper Derby dam.	Same as A.	Same as A.	Same as A.
—	Minor to moderate effects on soils by trail use, off-trail use, special events, and other activities associated with increased visitation.	Greater than B.	Same as C.
—	Temporary minor adverse effect on soils from new trail construction.	Greater than B.	Greater than C.
—	—	Negligible adverse effects from constructing 11 miles of trails and 8 new small parking areas.	Same as C.
—	Moderate adverse effect through loss of soils from modifying or burying distribution lines.	Same as B.	Same as B.

Table 11. Comparison of environmental consequences for the Rocky Mountain Arsenal National Wildlife Refuge CCP and EIS alternatives.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
—	Moderate short-term adverse effects on erosion from improving trails accessibility.	Same as B.	Same as B.
—	—	Moderate adverse effect through loss of soils from adding 56th Avenue auto exits.	Same as C.
—	Minor long-term beneficial effects from abandoning 11.7 miles of roads and converting 8.5 miles to emergency use.	Minor beneficial effects from abandoning 14.5 miles of roads and converting 8.5 miles to emergency use.	Same as C.
—	Moderate, localized, adverse effects of soil disturbance from reintroduction of BFF.	Same as B.	Same as B.
Physical Environment—Water Resources			
Major beneficial effect on water quantity from allowing natural surface flow to dominate.	Same as A.	Same as A.	Same as A.
Major beneficial effects from working with DIA and upstream cities on managing stream and surface flow.	Same as A.	Same as A.	Same as A.
Minor to moderate beneficial effects from recycling all drinking water, saving 8 billion gallons per year.	Same as A.	Same as A.	Same as A.
Potential adverse effects on water quality from surrounding development.	Same as A.	Same as A.	Same as A.
Minor adverse effects of siltation from increased visitation.	Greater than A.	Greater than B.	Similar to C.
Major beneficial effects from maintaining water control infrastructure, providing ponds for wildlife and flood control.	Same as A.	Same as A.	Same as A.
Physical Environment—Air Quality			
Beneficial effects on air quality from maintaining and increasing significant grassland habitat.	Same as A.	Same as A.	Same as A.

Table 11. Comparison of environmental consequences for the Rocky Mountain Arsenal National Wildlife Refuge CCP and EIS alternatives.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
Minor temporary adverse effects of management and visitation through vehicular and dust emissions.	Similar to but slightly greater than A.	Greater than B.	Similar to C.
Temporary adverse smoke effects from prescribed fires.	Same as A.	Same as A.	Same as A.
Physical Environment—Climate			
Minor beneficial effects of habitat restoration through carbon sequestration.	Same as A.	Adverse effects of increased emissions from increased visitation, partially offset by increased energy efficiency of nonmechanical modes of transport.	Same as C.
Minor beneficial effects of constructing energy-efficient administration building and increased sustainability measures for new facilities.	Same as A.	Similar to A.	Same as C.
Physical Environment—Night Sky			
—	Beneficial effect of removing unnecessary artificial lighting from targeted areas and minimizing evening programming.	Same as B.	Same as B and C.
Physical Environment—Soundscapes			
Minor short-term effects of maintenance involving heavy equipment.	Same as A, plus: Minor beneficial effects from preserving quiet areas of the refuge.	Same as B, plus: Minor adverse effects from increased visitation.	Same as C.
Physical Environment—Cumulative Impacts			
Potential minor to moderate adverse cumulative effects of contaminated runoff from proposed development south of refuge.	Same as A.	Same as A.	Same as A.
Biological Environment			
Biological Environment—Habitat			
Major beneficial effects from HMP implementation.	Same as A.	Same as A.	Same as A.
Adverse effects on grassland birds from preservation of woodlands.	Same as A.	Same as A.	Same as A.
Moderate beneficial effect from inventorying riparian vegetation.	Same as A.	Same as A.	Same as A.
Moderate beneficial effect from continuing partnerships with agencies for restoration.	Same as A.	Same as A.	Same as A.

Table 11. Comparison of environmental consequences for the Rocky Mountain Arsenal National Wildlife Refuge CCP and EIS alternatives.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
—	Minor to moderate beneficial impact on habitat restoration from reintroduction of BFF.	Same as B.	Same as B.
—	Minor adverse trampling effects on vegetation associated with increased visitation.	Minor to moderate adverse trampling effects on vegetation associated with increased visitation.	
—	Minor temporary adverse effects of vegetation and soil loss from construction, new trails, burying transmission lines, and installing fences.	Same as B, plus: Long-term minor beneficial effect from burying all transmission lines.	Same as C.
—	Minor beneficial effect of removing 11.7 miles roads.	Minor beneficial effects of removing 14.5 miles of roads and converting 8.4 miles to emergency use.	Same as C.
—	—	Negligible adverse effect of spread of invasive species from increased visitation.	Similar to C.
—	—	Minor adverse habitat disturbance effects from construction of eight new modest-sized parking areas and 11 miles of trails.	Same as C.
—	—	Minor adverse habitat disturbance from construction of new facilities and amenities.	Same as C.
—	—	Minor adverse effect of disturbance and possible spread of invasive species from opening Wildlife Drive.	Same as C.
—	—	Opening shoreline fishing may require additional parking lots and amenities with minor to moderate negative impact	No effect
—	—	Minor adverse effects of disturbance, fragmentation, and spread of invasive species from increased trail connectivity to areas outside refuge.	Potentially greater than C.
—	—	Potential moderate adverse effect of increased fishing activity from trampling and habitat fragmentation along shorelines.	Same as C.

Table 11. Comparison of environmental consequences for the Rocky Mountain Arsenal National Wildlife Refuge CCP and EIS alternatives.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
—	—	Additional trailheads, trails and access would have moderate adverse fragmentation impacts.	Same as Alternative C
—	—	—	Moderate temporary adverse effects from additional large-scale events.
—	—	—	Minor to major beneficial effects from sharing knowledge that leads to improved managements.
Biological Environment—Wildlife			
No effects from reintroduction of BFF.	Moderate to major long-term beneficial effects from reintroduction of BFF.	Same as B.	Same as B.
—	Moderate beneficial effects on other species from closure of BFF reintroduction area.	—	—
Minor to major beneficial effects on grassland bird species from habitat restoration activities.	Same as A.	Same as A.	Same as A.
—	Moderate to major beneficial effects of reintroducing plains sharp-tailed grouse, greater prairie-chicken, and pronghorn.	Same as B.	Same as B.
—	Minor adverse effects of increased visitation on reintroduced species of concern.	Moderate adverse effects of increased visitation on reintroduced species of concern.	Similar to but less than C.
—	—	Moderate adverse effects on species of concern from opening Wildlife Drive.	Similar to C.
Beneficial effects on grassland species from management of bison and prairie dog populations.	Same as A.	Same as A.	Same as A.
Minor adverse disturbance effects on grassland birds from increased visitation.	Greater than A.	—	—
—	Minor adverse effects on prairie dog predators (e.g., raptors, coyotes) from competition from BFF.	Same as B.	Same as B.

Table 11. Comparison of environmental consequences for the Rocky Mountain Arsenal National Wildlife Refuge CCP and EIS alternatives.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
		Moderate adverse effects on surrogate grassland bird and other native wildlife species from opening Wildlife Drive. Negligible adverse effects on bison and prairie dogs.	Similar to C.
Potential minor adverse effects on fish from water quality degradation associated with increased visitation.	Similar to but slightly greater than A.	Similar to A and B but potentially increasing to moderate intensity because of high visitation levels.	Similar to but less than C.
Minor adverse effects on reptiles and amphibians from roadkill associated with increased visitation.	Similar to but slightly greater than A.	Similar to A and B but potentially increasing to moderate intensity because of high visitation levels, additional trails, and potential for increased sediment discharge.	Similar to but less than C.
Minor to moderate adverse disturbance effects on birds associated with increased visitation.	Similar to but slightly greater than A.	Similar to A and B but potentially increasing to moderate intensity because of high visitation levels, additional trails, and potential for increased sediment discharge.	Same as C.
Minor, temporary adverse disturbance effects associated with construction of new administration building.	Similar to A.	Similar to but greater than A and B because of greater extent of facility construction.	Same as C.
—	—	—	Moderate temporary adverse disturbance effects associated with two large special events annually.
Beneficial effects on deer populations from culling activities.	Same as A.	Same as A.	Same as A.
—	Minor effects on deer population from hunting program.	Same as B.	Same as B.
Cumulative Impacts			
Beneficial cumulative effects on habitat of other entities (e.g., Sand Creek Greenway, Barr Lake State Park, Prairie Gateway Open Space) undertaking habitat conservation in region.	Same as A.	Same as A.	Same as A.
Beneficial cumulative effects on wildlife of conservation activities on neighboring lands.	Same as A.	Same as A.	Same as A.

Table 11. Comparison of environmental consequences for the Rocky Mountain Arsenal National Wildlife Refuge CCP and EIS alternatives.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
Adverse cumulative effects on wildlife associated with residential and commercial development outside refuge.	Same as A.	Same as A.	Same as A.
Visitor Services			
Visitor Services—Hunting			
—	Minor to moderate temporary adverse effects on visitor opportunities from closures during hunts.	Same as B.	—
—	Beneficial effect on young and special-needs visitors interested in hunting.	Same as B.	—
—	Minor to moderate beneficial effects from providing hunter education.	Same as B.	—
—	—	Minor beneficial effect from constructing archery range.	—
—	—	—	Minor beneficial effect from promoting hunting throughout Colorado and Refuge system.
—	No cumulative effects anticipated.	Same as B.	—
Visitor Services—Fishing			
Long-term beneficial effects on visitor experience from ongoing fishing program.	Same as A.	Additional beneficial effects from increased programming and instruction.	Similar to C.
—	—	Adverse effects on wildlife from increased fishing by displacing other wildlife species from fishing areas.	Similar to C.
No cumulative effects anticipated.	Same as A.	Same as A.	Same as A.
Visitor Services—Wildlife Observation and Photography			
Minor adverse effects of unimproved trails system and staff limitations.	Moderate beneficial effects from added facilities, new programs, and reintroduction of native species.	Major beneficial effects of expanded trail system, improved viewing facilities, and improved access.	Similar to C, plus additional beneficial effects of opportunities presented by commercial vendors and partners.
—	—	Moderate beneficial effects from opening Wildlife Drive.	Same as C.
—	—	Minor adverse effects from crowding and potential for conflicts on trails and viewing areas.	Similar to C.

Table 11. Comparison of environmental consequences for the Rocky Mountain Arsenal National Wildlife Refuge CCP and EIS alternatives.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
Visitor Services—Environmental Education			
Moderate adverse effects from staff limitations constraining level of offerings.	Similar to A, plus: Beneficial effects of developing new curricula based on BFF reintroduction and exhibit and increased accessibility on existing trails.	Similar to B, plus: Major beneficial effects of expanded onsite programming, addition of Environmental Education Center, additional tours, and additional interpretive materials.	Similar to C, plus: Increased opportunities through collaboration with commercial vendors.
—	—	Major beneficial effects of outreach to nontraditional visitors and increased off-site programming.	Similar to C.
—	—	—	Major beneficial effects of summer camps, adult forums, living history programs, and rehabilitated historical exhibits.
Visitor Services—Interpretation			
Moderate adverse effects from staff and volunteer limitations constraining level of offerings.	Similar to A, plus: Beneficial effects of developing new curricula based on BFF reintroduction and exhibit and increased accessibility on existing trails.	Major beneficial effects of expanded facilities and programming, developing multilingual programming, expanding offsite programming.	Similar to C, plus: Beneficial effects of increased emphasis on linkage with regional sites.
—	—	—	Minor to moderate beneficial effects from incorporating 1861 into the refuge trail system.
Cultural and Historical Resources			
Minor beneficial effects on significant resources from stabilization of Egli House.	Same as A.	Similar to B, plus: Major beneficial effects from restoration of Egli House exterior.	Similar to C, plus: Major beneficial effects from restoration of Egli House interior.
Minimal effects from unanticipated discoveries through Section 106 compliance.	Same as A.	Same as A, except: Increased possibility of unanticipated discoveries associated with increased development of new facilities.	Same as C.
Potential beneficial effects from improved storage, curation, and possible deaccession.	Same as A.	Major beneficial effects from additional artifact storage.	Major beneficial effects from deaccessioning WWII/ Cold War artifacts to offsite facility.

Table 11. Comparison of environmental consequences for the Rocky Mountain Arsenal National Wildlife Refuge CCP and EIS alternatives.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
No change to research and interpretation.	Moderate beneficial effect from increased interpretation of prehistoric uses of native landscapes.	Moderate to major beneficial effects from increased interpretation opportunities, increased public outreach, partnerships with Native American communities, interpretation of historical resources, use of electronic media, and use of restored Egli House.	Similar to C, plus: Potential minor adverse effects through increased visitation. Beneficial effects from tours of fully restored Egli House. Moderate beneficial effects from additional research on prehistoric sites. Moderate to major beneficial effects from historical interpretation (e.g., 1861 wagon trail, WWII/Cold War history).
Infrastructure and Operations			
Moderate adverse effects from insufficiency of existing infrastructure to support anticipated increased visitation.	Moderate beneficial effects from developing infrastructure to support anticipated visitation increases. Minor temporary adverse effects from construction activities.	Similar to B, but benefits and temporary disturbances will be greater because of more extensive development of facilities.	Similar to C, except: Beneficial effects from partnerships and concessions allowing reallocation of staff for greater operational efficiency.
Access and Transportation			
Major adverse effect from poor signage and uninviting entrance.	Moderate to major beneficial effects from improved directional signage. Moderate adverse effect from existing entrance gate.	Major benefit from new inviting entrance gate and improved signage.	Same as C.
Major adverse effect from existing roadway conditions as visitation increases. Beneficial effects from abandoning 11.7 miles of roads.	Same as A, plus: Beneficial effects from abandoning 14.5 miles of roads and converting 8.4 miles to emergency use.	Same as B, plus: Major beneficial effect from opening Wildlife Drive, adding 9.3 miles of roadway. Moderate beneficial effect from allowing traffic to exit refuge at two additional locations.	Same as C.
Moderate adverse effects from shortage of designated parking areas.	Moderate beneficial effect of creating one new parking area at Rattlesnake Hill.	Major beneficial effects from adding eight new modest-sized parking areas. Moderate temporary short-term adverse effects associated with construction.	Same as C.
Minor adverse effects on existing trail system from increased visitation.	Moderate beneficial effect on trail system from adding two new trails (2.8 miles) and providing access to local communities.	Moderate beneficial effect from adding 11.2 miles of new trails and six pedestrian and bicycle access points.	Same as C.

Table 11. Comparison of environmental consequences for the Rocky Mountain Arsenal National Wildlife Refuge CCP and EIS alternatives.

<i>Alternative A— No Action</i>	<i>Alternative B— Traditional Refuge</i>	<i>Alternative C— Urban Refuge</i>	<i>Alternative D— Gateway Refuge</i>
Minor adverse effects from restriction of bicycle use to refuge road from main gait to Visitor Center.	Same as A.	Major beneficial effect from allowing bicycle access on some roadways and trails and substantially increasing community access.	Same as C.
Socioeconomic Environment			
111 jobs. \$4.7 million in labor income. \$7.2 million in value added.	141 jobs. \$5.9 million in labor income. \$9.1 million in value added.	296 jobs. \$12.1 million in labor income. \$18.8 million in value added.	165 jobs. \$6.8 million in labor income. \$10.6 million in value added.

