

chapter 2



ALTERNATIVES

Chapter 2. Alternatives

This chapter describes the four alternatives analyzed in detail in this EIS, including the Preferred Alternative and the No Action Alternative. The following sections describe how the alternatives were developed, how they address the significant issues identified during the scoping process, and how each alternative would achieve the objectives and strategies identified for the Refuge. The chapter's last two sections describe options considered but dismissed from detailed analysis, and activities that could result in cumulative effects when combined with the effects of the Preferred Alternative.

2.1. DEVELOPMENT OF ALTERNATIVES

SIGNIFICANT ISSUES

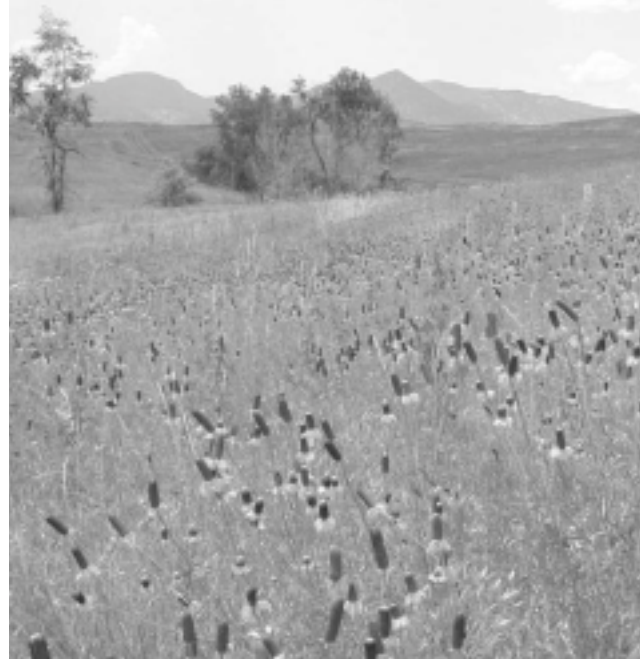
In 2002, the Service held several meetings with the public and agencies to identify the issues and concerns that were associated with the establishment and management of the Rocky Flats NWR. The public involvement process is summarized in greater detail in Chapter 6. Based on input from the public scoping process, as well as guidance from the Improvement Act, the NEPA and the Service's planning policy, the planning team selected seven significant issues that will be addressed in the alternatives:

1. Vegetation Management
2. Wildlife Management
3. Public Use
4. Cultural Resources
5. Property
6. Infrastructure
7. Refuge Operations

RESOURCE MANAGEMENT ZONES

Early in the planning process, the planning team identified three management zones that correspond to general vegetation communities at Rocky Flats. These management zones are xeric tallgrass prairie, wetlands and riparian corridors, and mixed prairie grasslands. These management zones were developed to organize management concepts and provide direction to the objectives and strategies under each alternative.

© Nelson, RFETS



Prairie coneflower in the mixed prairie grassland.

Xeric Tallgrass Prairie

Rocky Flats supports an example of the rare xeric tallgrass prairie community, which is generally found on cobbly soils in the western portions of the site. While the quality and species composition of this community vary, all of the xeric tallgrass management area has similar characteristics and management needs.

Wetlands and Riparian Corridors

Located primarily along the drainages at Rocky Flats, the wetlands and riparian corridors management zone is generally composed of plant communities that depend on moist conditions. While the vegetation communities in this management zone range from various wetlands to riparian woodland, they all share similar characteristics and management needs.

Mixed Prairie Grasslands

The eastern portions of Rocky Flats largely are composed of short and mixed-grass prairie communities. The various grassland communities in this grassland management zone share similar characteristics and management needs.

2.2. DESCRIPTION OF ALTERNATIVES

Development of the alternatives was based on the public scoping process and workshops involving the planning team and Service staff. The public scoping process identified the significant issues to be addressed by the alternatives. The planning workshops allowed the Service to develop a range of possible alternatives and specific objectives and strategies for those alternatives. The workshops resulted in four alternatives that are analyzed in detail in this EIS. A fifth alternative was considered early in the process, but was eliminated from consideration (this alternative is discussed Section 2.9). The four alternatives are:

- Alternative A: No Action
- Alternative B: Wildlife, Habitat and Public Use (Preferred Alternative)
- Alternative C: Ecological Restoration
- Alternative D: Public Use

ALTERNATIVE A: NO ACTION

In the No Action Alternative, the Service would not develop any public use facilities and would not implement any new management, restoration, or education programs at the Refuge. In this alternative, the Service would continue to manage the Rock Creek Reserve in accordance with the Rock Creek Reserve Integrated Natural Resources Management Plan (DOE 2001). The Rock Creek Reserve is 1,800 acres surrounding Rock Creek in the northern part of the Refuge (Figure 5).

Management activities within the Rock Creek Reserve would include ongoing resource inventories and monitoring, use of prescribed fire, habitat restoration, weed control, and road removal and revegetation. As “caretakers” of remaining portions of the site, the Service would emphasize minimal resource stewardship (such as weed control) outside of the Rock Creek Reserve. Public use opportunities would be limited to guided tours to the Rock Creek Reserve (Figure 5).

ALTERNATIVE B: WILDLIFE, HABITAT AND PUBLIC USE (PREFERRED ALTERNATIVE)

Alternative B, the Service’s Preferred Alternative, emphasizes both wildlife and habitat conservation along with a moderate level of wildlife-dependent public use. Refuge-wide habitat conservation includes

management of native plant communities, restoration of disturbed areas, removal and revegetation of unnecessary roads and stream crossings, management of deer and elk populations, and protection of Preble’s meadow jumping mouse habitat. Restoration would strive to replicate pre-settlement conditions and would use a variety of integrated pest management (IPM) tools including prescribed fire and grazing.

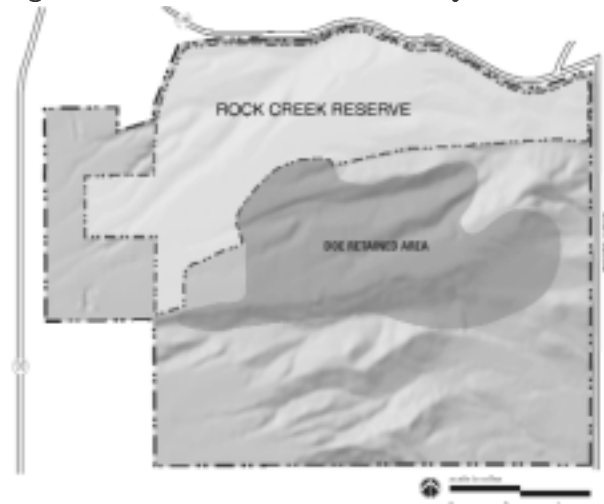
Visitor use facilities would include about 16 miles of trails, a seasonally staffed visitor contact station, trailheads with parking, and developed overlooks (Figure 7). With the exception of one trail opened immediately, restoration would begin before other trails are opened. Most trails would use existing road corridors. Public access would be by foot, bicycle, or horse, with limited car access to two parking areas on the Refuge. A limited public hunting program would be developed in collaboration with the Colorado Division of Wildlife (CDOW). On- and off-site environmental education programs would focus on the prairie ecosystem and would target primarily high school and college students.

The Service would provide compatible scientific research opportunities focused on wildlife habitat and interactions between wildlife and human use. Partnerships would be sought with federal, state and municipal agencies and private entities to help achieve Refuge goals and conserve contiguous lands.

ALTERNATIVE C: ECOLOGICAL RESTORATION

Alternative C emphasizes Refuge-wide conservation and restoration of large areas of wildlife habitat. Restoration and management activities would strive to replicate pre-settlement conditions. Restoration efforts

Figure 5. Rock Creek Reserve Boundary.



would focus on disturbed areas such as road corridors, stream crossings, cultivated fields and developed areas and would use a variety of IPM tools including prescribed fire and grazing.

Limited public use and minimal facility development would occur in this alternative (Figure 8). Any facilities on the Refuge would be built for specific resource protection and management purposes. Because of this, office space would be leased off-site. One trail would provide access to the Rock Creek drainage. Access would be limited to pre-arranged, guided tours only. Environmental education programs would be limited to publication and local distribution of educational materials about the Refuge and its ecological resources.

In Alternative C, the Service would facilitate increased opportunities for applied research relating to long-term habitat changes and species of special concern. Partnerships would be expanded with governmental agencies, educational institutions and others to assist in wildlife and habitat protection, resource stewardship and the preservation of contiguous lands.

ALTERNATIVE D: PUBLIC USE

In Alternative D, the Service would emphasize wildlife-dependent public uses. Wildlife and habitat management would focus on the restoration of select

plant communities and ongoing conservation and management of existing native plant and wildlife species. A variety of IPM tools would be used, although prescribed fire and grazing would not be used. Some roads and other disturbed areas not used for trails or public use facilities would be restored with native vegetation.

A broad range of public use opportunities would be provided, including wildlife observation and photography, interpretation, environmental education and a limited hunting program (Figure 9). Access through the Refuge would be provided by a 21-mile trail system that would accommodate hiking, bicycling and equestrian use. Most trails would be constructed along existing roads. A visitor center would be constructed on the Refuge or at a nearby location. Environmental education efforts would include on- and off-site programs for kindergarten through college age students.

Research opportunities would focus on the integration of public use into the Refuge environment and interactions between wildlife and visitors. Partnerships would be sought with various public agencies to help sustain Refuge goals and preserve contiguous lands. The Service also would work with local communities and tourism organizations to promote wildlife-dependent public uses on the Refuge.

© Shapins Associates



The Front Range mountain backdrop provides a beautiful setting for wildlife observation.

Table 2: Summary of Proposed Management Actions

<p>GOALS</p>	<p>ALTERNATIVE A — No Action</p> <p><i>Continue current habitat and wildlife management practices that focus on the Rock Creek drainage. Limit habitat and wildlife management in other areas to the protection of existing conditions. Restrict general public use. Continue limited compatible scientific research opportunities.</i></p>	<p>ALTERNATIVE B — Wildlife, Habitat, & Public Use</p> <p><i>Implement extensive habitat and wildlife management and conservation focused on the restoration to pre-settlement conditions. Accommodate wildlife-dependent public use. Facilitate compatible scientific research that focuses on habitats, wildlife, and public use.</i></p> <p>*Preferred Alternative</p>
<p>Wildlife & Habitat</p>	<p>Maintain current conservation and restoration approaches. Increase weed control and restoration in the Rock Creek drainage only.</p>	<p>Throughout the site, use a variety of techniques (including prescribed burning) to restore disturbed areas, conserve native plant communities and wildlife populations, and reduce coverage of invasive weeds.</p>
<p>Public Use, Education, Interpretation</p>	<p>Programs – Public access permitted by organized guided tours only. Public use programming limited to the distribution of a Refuge fact sheet that outlines the Refuge’s history and its natural and cultural resources.</p> <p>No environmental education programming.</p> <p>Facilities – Public use facility development limited to a restroom facility.</p>	<p>Programs – Access limited to a trail down to Lindsay Ranch during years 1-5. Following year 5, open Refuge to general public and provides interpretation and an organized youth/disabled hunting program.</p> <p>Environmental education programs for high school and college-level students.</p> <p>Facilities – Hiking, biking and limited equestrian trails (16.5 miles total). Wildlife viewing blind, overlooks, interpretive signage, kiosk, visitor contact station and restrooms.</p>
<p>Safety</p>	<p>Staff – Trained staff knowledgeable about the site’s institutional controls, requirements, and resources.</p> <p>Visitors – All visitors would remain under the supervision of Refuge staff.</p>	<p>Same as A plus:</p> <p>Visitors – Staff and outreach materials would inform visitors about opportunities and restrictions for access, and any safety hazards.</p>
<p>Open & Effective Communication</p>	<p>Outreach limited to the distribution of a Refuge fact sheet to interested parties that request information.</p>	<p>Programs and materials developed to inform the public about the Refuge’s resources, the NWR System, the Service’s stewardship role, risk and management issues and to recruit visitors and support for the Refuge.</p>
<p>Working with Others</p>	<p>Partnership – Maintain relationships with CDOW and surrounding open space agencies and landowners.</p>	<p>Partnerships – More extensive partnerships to address the conservation of habitat across boundaries, to interpret cultural resources and to recruit more compatible scientific research.</p> <p>Volunteers – Develop a volunteer program to assist Refuge staff with public use programming and other refuge operations.</p>
<p>Refuge Operations</p>	<p>2 full-time employees.</p> <p>Renovate existing shed to house tractors and a small office space. Maintain the existing stock fence.</p>	<p>4 full-time employees.</p> <p>Construct a storage/maintenance building and a contact station with office space. Maintain the existing stock fence.</p>

<p>ALTERNATIVE C — <i>Ecological Restoration</i></p> <p><i>Maximize habitat and wildlife management and conservation focused on the restoration to pre-settlement conditions. Limit general public use. Implement compatible scientific research that focuses on habitat and wildlife.</i></p>	<p>ALTERNATIVE D — <i>Public Use</i></p> <p><i>Focus habitat and wildlife management on the restoration of select plant communities and the conservation of existing native plant communities and wildlife species. Provide opportunities for a diversity of compatible public uses. Facilitate compatible scientific research focused on habitats, wildlife, and the related impacts of public use.</i></p>
<p>Same as B plus:</p> <p>Institute more extensive restoration and monitoring.</p>	<p>Throughout the site, restore some disturbed areas (no burning or grazing), conserve native plant communities and wildlife species, and limit the spread of invasive weeds. Accept prairie dogs from off-site.</p>
<p>Programs – Access limited by organized guided tours only. Public use programming limited to the distribution of a Refuge fact sheet habitat types, wildlife populations and the Service’s restoration practices and the development of simple learning materials for high school college educators.</p> <p>No environmental education programming.</p> <p>Facilities – Limited facility development including a hiking trail (0.6 miles), an overlook with an interpretive sign panel and a restroom.</p>	<p>Programs – Greatest amount of public use opportunities including increased natural and cultural interpretation programs.</p> <p>Environmental education programs expanded to serve kindergarten - college-level students.</p> <p>Facilities – Extensive facility development including hiking, biking and equestrian trails (21.2 miles total), wildlife viewing blinds, interpretive signage, kiosk, outdoor classroom, visitor center and restrooms.</p>
<p>Same as A</p>	<p>Same as B</p>
<p>Same as B</p>	<p>Same as B</p>
<p>Same as B plus:</p> <p>Partnerships – Partnerships and research emphasis is on habitat and wildlife conservation.</p> <p>Volunteers – Volunteers would assist with restoration and conservation operations rather than public use programming.</p>	<p>Same as B</p>
<p>5 full-time employees.</p> <p>Construct a storage/maintenance building and lease office space. Maintain the existing stock fence.</p>	<p>8 full-time employees.</p> <p>Construct a larger storage/maintenance building and a visitor center with office space. Maintain the existing stock fence.</p>

2.3. WILDLIFE AND HABITAT AND PUBLIC USE MANAGEMENT DESCRIPTIONS

With many miles of trail, thousands of acres of grassland habitat and a beautiful mountain backdrop, the Refuge could become a popular destination for wildlife enthusiasts, naturalists and students within the Denver metropolitan area. The visitor experience at the Refuge would be characterized by the Service's commitment to providing visitors with an understanding and appreciation of the flora and fauna of the prairie ecosystem. The Service's efforts to connect visitors to their natural resource heritage would build upon regional efforts to promote an appreciation for the grassland environments.

Given the current cleanup of the Rocky Flats Environmental Technology Site and the Service's commitment to habitat conservation and enhancement, the Refuge would provide an excellent opportunity to educate the public about the processes of grassland restoration and to actively involve them in the rehabilitation of the landscape.

WILDLIFE AND HABITAT MANAGEMENT

Preble's Habitat Management

Riparian and wetland communities at the Refuge support habitat for a variety of wildlife species, including the threatened Preble's meadow jumping mouse. In all alternatives, the Service would protect and maintain Preble's habitat throughout the Refuge. While meeting the Service's obligations under the Endangered Species Act, the protection of Preble's habitat also would serve other species that depend on riparian and wetland communities for survival.

Alternative A would protect and maintain Preble's habitat; Alternatives B, C and D also would direct the Service to improve habitat for the mouse (and other riparian species). Part of the riparian habitat enhancement efforts in Alternatives B, C and D would be the removal and revegetation of unused roads and stream crossings. In Alternative A, this revegetation would only occur within the Rock Creek Reserve.

In all alternatives, the Service would conduct surveys of Preble's habitat every 2 to 3 years to detect changes in size and location of existing populations. Alternatives B, C and D would expand the surveys to include monitoring plant diversity in riparian areas. In Alternatives B and D, where there would be trail use through some riparian habitat areas, the Service would seek funding and partnerships to assist in

monitoring the impacts of recreational use on Preble's and its habitat.

Xeric Tallgrass Management

The rare xeric tallgrass grassland community, which dominates the pediment tops in the western portion of the Refuge, is an important natural resource that needs special consideration and management. In all alternatives, the Service would manage the xeric tallgrass to maintain the extent and improve the native species composition of this community. The Service would develop a vegetation management plan to direct management efforts (including herbicide application, biological controls, prescribed fire, grazing and mowing) and would monitor species composition and weed infestations every few years to ascertain the effectiveness of management efforts. In Alternative A, no grazing would be used and prescribed fire would be limited to the Rock Creek Reserve. Prescribed fire and grazing would not be used in Alternative D.

Mixed Grassland Prairie Management

Nearly half of the Refuge consists of mixed grassland prairie communities. While these communities are relatively common along the Colorado Front Range, they play an important role in providing habitat for various wildlife species. Management strategies for the mixed grassland prairie include the use of prescribed fire in Alternatives A, B and C and the use of managed grazing in Alternatives B and C. In the southeast corner of the Refuge, a former agricultural field has been planted with non-native grasses. In Alternatives B and C, the Service would revegetate this and other disturbed areas with native grassland species that would improve the extent and diversity of grassland habitat. In all alternatives, additional management strategies would be implemented in the mixed grassland prairie communities according to the objectives and strategies outlined under weed management, prairie dog management, habitat restoration and species reintroduction.

Road Restoration and Revegetation

Rocky Flats currently has over 70 miles of roads, of which about 50 miles will be under Service jurisdiction. All of the alternatives call for the removal and revegetation of roads and stream crossings that would not be used for maintenance access, fire control, trails, or other Refuge purposes. The extent of restoration efforts would be:

- Alternative A (in the Rock Creek Reserve): 12 miles of road; 7 stream crossings

- Alternative B: 26 miles of road; 13 stream crossings
- Alternative C: 26 miles of road; 13 stream crossings
- Alternative D: 24 miles of road; 6 stream crossings

While Alternative C would have fewer roads and trails overall, the length of road to be revegetated in Alternative B is the same as Alternative C because in Alternative B, a new trail segment would replace the existing road in the Woman Creek drainage. See Figures 25 and 26.

Weed Management

Noxious weeds present a tremendous challenge to the health and diversity of native plants and wildlife habitat on the Refuge. Under Alternatives B, C and D, the Service would control the spread and reduce the density of diffuse knapweed, Dalmatian toadflax and Canada thistle during the 15-year timeframe of the CCP. In Alternative A, this reduction would only occur within the Rock Creek Reserve; outside of Rock Creek, the Service would control the spread of weeds, but would not commit resources to weed reduction.

Under Alternatives B and C weed management scenarios would employ a comprehensive IPM approach, including the use of herbicides, biological controls, mechanical removal, prescribed fire and controlled grazing. Weed infestations would be mapped annually. Prescribed fire and grazing would not be used in Alternative D and no grazing would occur in Alternative A. In Alternative A, however, limited prescribed fire would be used in the Rock Creek Reserve. Additional methods used in Alternatives B and C would include informal surveys along roads and trails and temporary fences to collect tumbleweeds which disperse seeds with the wind.

Deer and Elk Management

While the sizes and locations of deer and elk populations at the Refuge are well known, the carrying capacity of the habitat at the Refuge relative to population size has not been determined. In all alternatives, the Service and/or CDOW would determine a target population for deer and elk on the Refuge and would seek to manage those levels. Tools to attain these population goals include culling by Service and/or CDOW staff. In Alternatives B and D, a limited public hunting program also would be used.

Managing deer and elk within target population levels for the Refuge would minimize the potential for overgrazing and overbrowsing of sensitive riparian habitat. In all alternatives, the Service would monitor sensitive areas for such impacts.

Prairie Dog Management

The short and mixed grassland communities in the eastern portions of the Refuge provide up to 2,460 acres of habitat for black-tailed prairie dog. About 113 acres of prairie dog colonies were mapped at the Refuge in 2000. Due to recent plague outbreaks, about 10 of those acres are currently occupied. In all alternatives, prairie dog populations would be allowed to expand naturally within their primary habitat areas. In Alternative A, this expansion would not be limited. In Alternative B colonies would be limited to 750 acres, in Alternative C colonies would be limited to 500 acres and in Alternative D colonies would be limited to 1,000 acres. Alternative D would allow the Service to evaluate the suitability of accepting unwanted prairie dogs that are relocated from other jurisdictions; the other alternatives would not allow prairie dog relocation onto the Refuge.

Species Reintroduction

The task of restoring native species to the Refuge has already begun. In 2003, two native fish species that have been decreasing regionally were introduced into Rock Creek. Additionally, the CDOW, the City of Boulder, and Boulder County introduced a population of sharp-tailed grouse onto their open space properties north of the Refuge. In all alternatives, the Service would continue to work with CDOW to facilitate



© Mauro

Prairie dogs would be managed differently under each alternative.

species reintroduction at the Refuge. In Alternatives B, C and D, the Service would take active steps to evaluate the suitability of additional species reintroductions and to complete a management plan for sharp-tailed grouse reintroduction on the Refuge.

Alternative C would promote the overall goal of restoring the Refuge environment to pre-settlement conditions. In Alternative C, the Lindsay Ponds on Rock Creek, which currently provide habitat for the reintroduced fish species, would be removed and Rock Creek restored.

PUBLIC USE MANAGEMENT

This section offers a preview of the visitor experience of the Refuge in each alternative. Alternatives A and C would have limited and controlled access with few visitors; for Alternatives B and D, the Refuge would be open to the public for a variety of uses. The three primary components that will shape the visitor's Refuge experience would be public outreach, interpretation, and public use activities and facilities. These components are described to illustrate how a visitor would experience the Refuge.

The public outreach component describes methods used to educate the potential visitor about the Refuge, pique their interest, and recruit them to participate in public use programs. The interpretation component identifies critical stories to be told and the natural and cultural resources that will become the basis for educational and interpretive activities. How visitors access the site, what activities they enjoy, where they travel and what facilities they encounter are outlined in the public use activities and facilities component.

Public Outreach

Improving public perception of the Refuge by informing visitors about the site's natural resources and addressing safety concerns is essential to the development of successful public use programs. Past concerns about contamination, radiation exposure and other environmental risks have fostered apprehension about visiting the Refuge. The Rocky Flats site has been closed to the general public for over 50 years and the lack of access opportunities has also contributed to fearful speculation about the site's condition.

In an effort to assuage public safety concerns, the Service would develop public outreach programs in all alternatives. The Service would attempt to build a stronger base of public understanding, support and stewardship within the Denver metropolitan area through a variety of outreach methods.

Communication

The "Open and Effective Communication" goal (described in Chapter 1) is driven by the Service's commitment to provide the public with clear information about the safety of the site, instill confidence in the Service's ability to provide safe visitor experiences and to develop community support for the Service's programs and management policies. In response to the concerns raised during public scoping regarding the site's history and contamination, the Service sees the value in developing a communication goal to guide public outreach efforts. The goal clearly emphasizes the importance of educating the public about the Refuge, the Service and the NWRS.

With the exception of Alternative A (only limited public outreach), all alternatives would include the development of a variety of public outreach methods to inform the public about environmental stewardship, risk communication, CCP implementation, and the mission of the Service and the NWRS. For example, a visitor may learn about the Refuge and opportunities to visit the site through media coverage, newsletters and flyers, or by attending community events. To reach a broad range of people, the Service would coordinate with local partners to participate in community events and provide input on local environmental issues. The outreach efforts would be instituted during the first year of the Refuge's establishment and would be ongoing throughout the life of the CCP. Public outreach efforts in Alternative A would be limited to the distribution of a Refuge fact sheet to interested parties that request information.

© USFWS



Alternatives B and D would have environmental education programs.

Table 3. Interpretive Themes

Theme: <i>Habitat Restoration</i>: “Diverse wildlife populations require healthy plant communities.”	
Subthemes: Explore the various types of habitat at the Refuge and promote visitors' awareness, understanding and appreciation of both the prairie ecosystem and the Service's restoration efforts.	<i>Plants for Wildlife</i> : Riparian and prairie plant communities including the rare xeric tallgrass and tall upland shrublands provide shelter and food for wildlife. <i>Battling Invasive Weeds</i> : Invasive weeds crowd native plants and degrade habitat at the Refuge and throughout the West. <i>Restoring the Prairie</i> : Restoring and maintaining the native prairie requires a variety of tools and techniques.
Theme: <i>Wildlife</i>: “Wildlife take refuge at Rocky Flats.”	
Subthemes: Explore the relationships between habitat types and the kinds of wildlife they support.	<i>Home to Wildlife</i> : Refuge wildlife forage and nest in the grasslands, occupy the riparian areas and migrate to and from adjacent open space lands. <i>Threatened and Endangered Species</i> : Preble's meadow jumping mouse, a threatened species, resides in the riparian habitat found at the Refuge. <i>Returning to the Prairie</i> : Reintroducing prairie species to the Refuge boosts biodiversity and creates unique viewing opportunities.
Theme: <i>Wildlife and People</i>: “Wildlife comes first.”	
Subthemes: Explore how wildlife and people co-exist and how both will benefit from habitat restoration and conservation.	<i>Watchable Wildlife</i> : Viewing wildlife in a natural setting. <i>Respecting Wildlife</i> : While an enjoyable activity, wildlife observation requires respect and consideration for wildlife.
Theme: <i>History</i>: “Native Americans, settlers and the DOE all used Rocky Flats. Today, it is protected for wildlife.”	
Subthemes: Interpret the historical periods that have shaped the site and how generations have managed to survive in the harsh climactic conditions of the prairie landscape.	<i>Prehistoric Prairie Settlement</i> : Native American activity on the plains – describing settlements, hunting and day-to-day survival on the prairie. <i>Settling the Frontier</i> : Homesteading on the Great Plains and the establishment of the Lindsay Ranch. <i>Plutonium Trigger Production</i> : DOE's development and management of a nuclear weapons production site and the cold war history. The Service will work in collaboration with the Cold War Museum to tell the story of the site as a nuclear production site. <i>A Renewed Purpose</i> : DOE's cleanup and closure of the production site and the Service's ongoing efforts to restore and conserve the prairie in order to provide habitat for wildlife and wildlife-dependent public uses.

Interpretation

The goal of the interpretive programs at the Refuge is to inform the public about the Rocky Flats site, educate about resident wildlife and their habitats, and cultivate a stewardship ethic. Committed to fostering an appreciation of the Refuge's natural resources, the Service developed interpretive themes that focus on wildlife, wildlife habitat and the site's history. Providing the public with interpretive information would enhance the public's understanding of their surrounding natural environment and increase support for the Service's habitat conservation efforts. Alternatives B and D would include substantial interpretive programming and signage. Alternative C would contain minimal signage. Alternative A would not include interpretive programs or facilities.

Interpretive Themes

Interpretive themes would provide a basis for the development of public use activities and facilities in Alternatives B, C and D. The themes capture the

essence and importance of ideas, concepts and features that emerged from the Service's review of the Refuge's natural and cultural resources.

The four themes represent the central messages that the Service wants to convey to visitors. The themes provide the foundation for all interpretive programming and facility development. Each theme is summarized by a simple statement and supported by several subthemes. Linked specifically to certain resources, the subthemes further define the stories about Refuge resources and the Service's role in transforming the site (Table 3).

Interpretive Facilities

In Alternatives B and D, a variety of facilities would be developed to help the visitor better understand the interpretive themes. The primary interpretive facilities would be signage, displays and a Refuge website. Facility development in Alternative C would be limited to an interpretive sign panel at the Rock Creek overlook.



Under Alternatives B and D, volunteers would have an opportunity to be involved in many aspects of refuge operations.

Signage/Displays: Signs and displays varying in design would help illustrate the historical and natural stories of the Refuge. Listed below are the types of signage a visitor would find upon entering and exploring the Refuge:

- **Roadside and Boundary Signs:** Signage is needed to notify people of the Refuge's location and direct visitors to the Refuge. In all alternatives, a refuge entrance sign would be placed outside the main entrance along Highway 93, and the exterior boundary would be posted with standard NWR boundary signs. All alternatives also would include small, metal boundary signs along the fence line.
- **Interpretive Signs:** Located at all trailheads and in selected spots along trails, small signs would display a map and/or interpretive facts about a specific location or topic. Trailhead signs would include information about the site's history, clean up and access restrictions.
- **Interpretive Sign Panels:** Larger signs at the Rock Creek and Highway 128 (Alternative D only) overlooks, the contact station/visitor center, and Lindsay Ranch would display interpretive information about the Refuge's resources and/or visitor orientation information.
- **Directional Signs:** Located at select trail intersections, signs would provide visitors direction and announce trail rules and regulations.
- **Visitor Kiosk:** Located outside the contact station/visitor center in Alternatives B and D, the kiosk would consist of three panels fastened to a wooden structure. The kiosk would provide orientation, regulatory and interpretive information for visitors entering the Refuge.
- **Interpretive Displays:** Within the contact station/visitor center, Alternatives B and D would have both permanent and changing displays that highlight the Refuge's natural resources.

Website: In Alternatives B and D, a Refuge website would provide a reference resource for students and the general public to learn from their classroom and/or home computer fun facts about the Refuge as well as scientific data related to the grassland ecosystem and its wildlife. The website would serve several education levels.

Interpretive and Environmental Education Programs
 Outlined below are general descriptions of the types of interactive and field-based interpretation and educational activities for each alternative. Directly tied to the interpretive themes, the programs would bolster environmental awareness and appreciation by highlighting the natural features and history of the Refuge. Refuge staff would develop and run the programs with the assistance of volunteers. Programs would be tailored to attract a diversity of visitors and the types of programs and their topics would change seasonally. The programs listed below apply to Alternatives B and D except where noted.

- **Guided Tours:** Included in all alternatives although tours in Alternatives A and C would be very limited and would be pre-arranged with Service staff. Refuge staff or a volunteer would lead interpretive walks that focus on wildlife, habitat needs, or the site's other natural and cultural resources. Tours would highlight unique characteristics of the site and identify the interrelationship

between prairie plant communities and wildlife populations.

- **Nature Programs/Presentations:** Conducted either in the field, in surrounding communities, or in the visitor center, presentations would offer an in-depth explanation of a specific topic. To the extent possible, Refuge volunteers and/or partners would lead these programs/presentations.
- **Hands-On Work:** Programs developed to recruit volunteer participation in prairie restoration may include seed collection, weed removal, or seeding. The work activities would include information sessions on restoration techniques and the benefits of restoring prairie habitat. Volunteers also may be involved with Refuge enhancement projects such as trail construction and general maintenance.
- **Teacher Resource Guides and Workshops:** Refuge staff would develop teacher resource guides that present the necessary information for teachers to conduct their own environmental education programs at the Refuge. The guides would meet Colorado's model content standards and would likely include pre-visit activities, on-site activities, post-visit activities and assessment activities. Additionally, the Service would sponsor teacher training workshops to familiarize local educators with the Refuge's resources.



Wildlife observation is a priority wildlife-dependent public use.

Public Use Activities and Facilities

Although guided by a “Wildlife First” mission that promotes the “conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats,” the Refuge System is also committed to investing in public use facilities and programs that foster an appreciation of the Refuge's natural resources. By raising public awareness and understanding of the prairie habitat and wildlife, the Service hopes to cultivate a land stewardship ethic among visitors.

Access

In all alternatives, access to the site would be obtained via a two-lane road off of Highway 93. In Alternatives A and C, access would be pre-arranged with the Service and the visitor experience would be limited to a guided tour with Refuge staff. In Alternatives B and D, the access road would direct visitors to orientation information, trailheads and parking areas.

To tie into surrounding existing and proposed trail systems, Alternatives B and D would include additional access points located on the north, east and south boundaries of the Refuge. Strategically located to provide links to proposed trail networks, the secondary access points along the Refuge boundary would permit visitors to enter the site on foot, bike and in some cases by horse. In these two alternatives, the Refuge would remain open from sunrise to sunset.

Because visitors in Alternatives B and D would be able to enter the site from a number of access points, each entry would serve as a “use portal” where signage would inform users about the distinction between where they came from (e.g., municipal open space) and where they are going (a National Wildlife Refuge). In addition to clarifying access opportunities and restrictions and information on the site's history and cleanup, the signage would inform visitors to the conservation practices and priorities that may differ from surrounding open space areas.

Wildlife-Dependent Public Uses

The four alternatives would present a spectrum of wildlife recreation opportunities ranging from guided tours, to hiking, to interactive interpretation programs. While visitors in Alternatives A and C would be guided through the site, visitors in Alternatives B and D would explore and learn about the site independently with the aid of interpretive facilities including signage, kiosks and printed materials. Through the careful siting of trails and the design of visitor use facilities, it would be possible to shape the Refuge environment so that it



© Mauro

Limited hunting, wildlife observation and photography would be included in Alternatives B and D.

invites exploration and reveals natural processes while minimizing impact to sensitive areas. Interpretive and educational programs would promote appreciation of the ecology of the prairie environment and inspire a greater appreciation for the Front Range's remaining grassland habitat. Dogs and other pets would not be permitted on the Refuge in any of the alternatives.

Wildlife-dependent public uses that would be made available to visitors in each alternative are as follows.

Alternative A

All public access would be pre-arranged with the Service prior to entering the Refuge. In Alternative A, the visitor experience would be restricted to a guided driving and/or walking site tour and opportunities to view or photograph wildlife would be incidental. The Service tour guide would interpret the Refuge's resources throughout the site tour.

Alternative B

The visitor experience in Alternative B would include opportunities for the public to engage in hunting,

wildlife observation, photography, interpretation and environmental education. The public use activities would be carefully managed to avoid harmful impacts to wildlife and their habitat. Because the Service would focus on restoration and facility development during the first 5 years of Refuge operation, most of these activities would not be instituted until the Refuge is fully open to the general public (by year 6).

- **Hunting:** A highly controlled youth and/or disabled hunting program would be held a few weekends a year. This program would allow youth and disabled individuals to hunt deer and elk with the assistance of Service staff (and Refuge partners) in a safe environment where they would have reasonable harvest opportunities. If necessary, the Service could consider expanding the hunting program to include the general public (depending on wildlife management needs). During special hunting weekends, the Refuge would be closed to all other visitors.

- **Wildlife Observation and Photography:** Trails, blinds and overlooks would provide numerous vantage points for observing wildlife. Naturalists, photographers and other wildlife enthusiasts would also enjoy opportunities to view and photograph wildlife off-trail (between October and May in areas south of Woman Creek).
- **Interpretation:** Upon entering the Refuge, visitors would find signage, maps and interpretive panels outside a visitor contact station. Interpretive and informational materials at trailheads, overlooks, and the contact station would educate visitors about specific site resources such as grassland restoration, early settlement of the prairie and wetland ecology.
- **Volunteers:** A volunteer program would be developed to provide support for Refuge staff. Volunteers would assist with orienting and educating visitors. Any visitor interested in learning more about the Refuge and, in turn, improving the Refuge experience for others would have the opportunity to volunteer.
- **Environmental Education:** Throughout the life of the CCP, the target audience for on- and off-site environmental education programs would be high school and college-level students. During the initial years of Refuge establishment (years 1 through 5), students would be encouraged to engage in research-oriented and independent study. Following year 5, guided tours and other nature programs would be designed to explore the site's natural and cultural resources and foster an understanding and lasting appreciation for the prairie environment.

Alternative C

In Alternative C, the Refuge staff would lead visitors on guided walking tours along a trail leading to the Rock Creek overlook. Upon request, the Refuge staff also could conduct guided auto tours that would provide opportunities to observe a diversity of habitat types. Limited public access opportunities would be made available upon Refuge establishment. Wildlife observation, photography and interpretation would be incorporated into the tour at the discretion of the Service guide. No hunting or environmental programs would be developed.

© Shapins Associates



Most of the trails would be converted from existing roads.

Public access would be restricted in Alternative C; however, guided tours would seek to enhance a visitor's appreciation of the Refuge's resources. The Rock Creek overlook offers views of a variety of habitats including riparian, wetland, xeric tallgrass and upland shrub. The overlook and hike also would reveal the Service's ongoing restoration efforts including road removal, stream crossing restoration, and re-seeding of the historic Lindsay Ranch landscape. The overlook's elevated perch on the pediment above Rock Creek would provide impressive distant views to the Rocky Mountain foothills and the Indian Peaks.

Alternative D

Among the alternatives, Alternative D would offer the greatest amount of wildlife-dependent public uses. The Refuge would be open to the general public about 6 months to 1 year after Refuge establishment, although it is likely that some of the facility development and programming would be phased in over the course of the CCP. Public use activities that would be offered in addition to those described above in Alternative B include:

- **Wildlife Observation and Photography:** A more extensive trail system in concert with additional wildlife blinds and overlooks would increase opportunities for visitors to view and photograph wildlife.
- **Volunteers:** A larger volunteer force would allow for the development of additional interpretive programming. The

volunteers would be available to educate visitors and host workshops, tours or lectures. Enrollment in the volunteer naturalist program would be open to the public and would entail training by Service staff on how to interpret the site's natural resources.

- **Interpretation:** Alternative D would have the same programming as Alternative B, but would have more facilities including a visitor's center and an outdoor education facility. Located just inside the Refuge entrance, a visitor center would attract visitors, provide a central location for visitor orientation and display interpretive exhibits.
- **Environmental Education:** The audience for educational programming in this alternative would be expanded to include K-8th graders as well as high school and college level students.

Other Public Uses

In Alternatives B and D, visitors would have the opportunity to bike and ride horses on some of the Refuge's multi-use trails. Although biking and equestrian uses are not priority public uses, they would provide means for visitors to access the Refuge's interior to observe wildlife and explore the prairie landscape.

© Shapins Associates



A pedestrian trail would overlook the Rock Creek drainage.

Alternative B

Biking would be allowed on all multi-use trails, but equestrian use would be limited to the multi-use trails in the southern half of the site. The southern multi-use trails would provide equestrians with links to adjacent trail systems in Westminster, Broomfield and Arvada.

Off-trail use would be permitted seasonally in the southern half of the Refuge. Off-trail use would provide visitors with increased opportunities to view wildlife and to explore the grasslands.

Alternative D

All multi-use trails would be open to equestrian and biking use. Off-trail use would be permitted seasonally in the southern half of the Refuge. Off-trail use would provide visitors with increased opportunities to view wildlife and to explore the grasslands.

© Shapins Associates



A future trail would follow the road corridor down to the Lindsay Ranch barn in Alternatives B and D.



Future trail corridor leading to the Woman Creek overlook.

Facilities

The types and scale of public use facilities would vary considerably in the four alternatives. Alternatives B and D contain the greatest amount of facility development. Facility development in Alternative A would be limited to a portable restroom. In Alternative C, facility development would consist of one trail, an overlook and a restroom. The trail system in Alternatives B and D would be planned to provide access to a variety of habitat types and to facilitate wildlife observation.

Alternative A

Other than providing a portable restroom, no public use facilities would be developed. Visitation to the Refuge would be by arrangement only and visitors would most likely be taken on auto tours along the access roads.

Alternative B

Facility development within Alternative B would carefully balance opportunities for visitors to explore the prairie with habitat conservation. Facility development would include trails, trailheads, overlooks, information kiosks, viewing blinds, contact station (with restrooms) and parking areas.

For the first 5 years of Refuge establishment, the site would only be open to the general public at scheduled times and one trail (1.75 miles) to Lindsay Ranch would be open to pedestrians. The initial trail would extend from the parking area to the Rock Creek overlook and make a loop within the Rock Creek drainage.

Outlined below are all facilities that would be developed and open to the public 5 years after the Refuge is established:

- **Trails:** Approximately 12.8 miles of multi-use trails and 3.8 miles of pedestrian-only trails would be developed. The majority of the trails would follow converted road corridors away from riparian areas. Trails within the Rock Creek drainage and other sensitive areas would be subject to seasonal closures as needed to protect wildlife. Looped pedestrian-only and multi-use trails as well as connections to adjacent trail systems would accommodate a variety of trail users.
- **Kiosk:** Within a kiosk located outside the contact station, visitors would find maps of the trail system, rules and regulations, and information on Refuge wildlife and habitat. The kiosk would consist of three sign panels hung on a wooden structure. The kiosk would be accessible to all visitors when the contact station is closed. During the early years of refuge establishment when access is limited and before development of the contact station, the kiosk will provide information on current and future public use opportunities.
- **Equestrian Uses:** Only multi-use trails in the southern portion of the site would be open to equestrian uses. Hitching posts would be located near the contact station, allowing equestrian users to hike to Lindsay Ranch.
- **Trailheads:** All entries to the Refuge trail system would be posted with signage that clearly demarcates the visitor's entry into a National Wildlife Refuge.
- **Overlook:** Three overlooks would provide views of the site and the outlying landscape. The overlooks would be simple and designed to fit into the prairie landscape. They would likely entail a graded, gravel area sited for its nearby and distant views. The Rock Creek and Highway 128 overlooks would feature interpretive sign panels. Benches at the Woman Creek and Rock Creek overlooks would provide a resting point for visitors.
- **Blinds:** Wildlife viewing blinds would be sited to optimize observation opportunities. The blinds would be designed to blend in with the surrounding landscape and minimize disturbances to wildlife.

- **Parking:** Four parking areas (spaces for about 54 cars and one bus) would be constructed. The largest parking lot (30 spaces) would be located at the entry drive terminus and adjacent to the contact station. This main parking area would be designed to accommodate horse trailers. An additional parking lot (20 spaces) would be situated on the site's northern edge with convenient access from Highway 128. Pull-offs along the main access road, south of the visitor contact station, and along Indiana Street would provide additional parking spaces (3 to 4 spaces each) for visitors using trails in the southern portion of the Refuge. All parking areas would be gravel and enclosed by a post and beam fence.
- **Restrooms:** Restrooms would be located near and/or within the visitor contact station.
- **Contact Station:** A small structure (approximately 750 to 1,000 square feet) would house an interpretive display and staff office space. The contact station would be the primary orientation point for visitors where they would collect information about the Refuge. The station also would serve as the meeting ground for guided tours and other Refuge programs. Located outside the main parking area, the contact station would be staffed seasonally (e.g., weekends from May through October), to provide visitor contact with Refuge staff.

Alternative C

Public access would also be "by arrangement only" and facility development would be minimal. There would be no designated parking areas, blinds or visitor contact station.

- **Trails:** Under the supervision of a tour guide, visitors would be able to experience the Refuge on foot. The approximately 0.75 mile soft surface pedestrian trail would lead visitors to an overlook on top of the pediment. The trail would be built along a converted road.
- **Overlook:** One overlook would be located above the Rock Creek drainage.
- **Restroom:** Toilets would be located at the trailhead.

Alternative D

Alternative D would involve the greatest degree of public use facility development. This alternative would build on the facilities included in Alternative B and include a more extensive trail system, more parking/trailheads, facility development, a visitor center and additional blinds and overlooks. Listed below are facilities that would be built in addition to those included in Alternative B:

- **Trails:** The trail system would expand slightly on the trail routes planned for Alternative B with the addition of 3.8 miles of trails (21.2 total – 14.9 multi-use and 6.3 pedestrian-only).
- **Equestrian Trails:** All multi-use trails would be open to equestrian use. Hitching posts would be located at the parking areas designed to accommodate horse trailers and at the Rock Creek overlook.
- **Trailheads:** With trailheads on the east, west and north sides of the Refuge and a trail connection with Arvada trails to the south, Alternative D would provide several access points and trail linkages. All entries to the Refuge trail system would be posted with signs that clearly demarcate entry into a National Wildlife Refuge.
- **Overlooks:** An additional overlook (four total) would be located in the northwest corner of the Refuge along Highway 128. This roadside overlook would allow potential visitors to pull over and view the Rock Creek drainage from the Refuge's northern boundary. All overlooks would be identical in design to those in Alternative B and would include interpretive sign panels and benches.
- **Blinds:** A second wildlife observation/photography facility would be located in an optimal viewing location.
- **Outdoor Classroom:** A "living classroom" would be designed to accommodate up to 60 students. The structure would comprise a 1,000-square foot, primitive shelter over a hard surface, with tables and benches to accommodate students. Also included would be 100-square feet of enclosed storage for education materials and moveable furniture. Programs conducted at the classroom would actively engage students in the exploration and study of the prairie.

2.4 OBJECTIVE AND STRATEGY OVERVIEW

The following table provide a general overview of the activities that are proposed in the CCP alternatives. The table does not include all of the Refuge

management activities and does not represent all of the objectives and strategies. Detailed descriptions of all of the proposed management actions are presented in this chapter.

Table 4. Objective and Strategy Overview

‘ = Activity is proposed for that alternative
- = Magnitude of activity varies

GOAL 1: WILDLIFE AND HABITAT MANAGEMENT	A L T E R N A T I V E S			
	A	B	C	D
PREBLE’S HABITAT MANAGEMENT				
Preble’s surveys	‘	‘	‘	‘
As needed, exclude ungulates from Preble’s habitat		‘	‘	‘
Monitor effects of recreation on Preble’s		‘		‘
XERIC TALLGRASS MANAGEMENT				
Vegetation Management Plan	‘	‘	‘	‘
Monitor species composition		‘	‘	‘
Use restoration tools to stimulate growth	‘	‘	‘	‘
- Potential use of prescribed fire	-	‘	‘	‘
- Potential use of grazing (cattle)		‘	‘	
MIXED GRASSLAND PRAIRIE MANAGEMENT				
Restore hay meadow to native prairie		‘	‘	
ROAD RESTORATION AND REVEGETATION				
Revegetate unused roads	-	-	-	-
Monitor restoration success		‘	‘	‘
WEED MANAGEMENT				
Develop Integrated Pest Management Plan		‘	‘	‘
Control weeds with biological controls and herbicides	‘	‘	‘	‘
Potential use of grazing to control weeds		‘	‘	‘
Potential use of prescribed fire to control weeds	-	‘	‘	
Interior fencing to collect tumbleweeds		‘	‘	
DEER AND ELK MANAGEMENT				
Establish target populations	‘	‘	‘	‘
Use population control methods	‘	‘	‘	‘
- Culling	‘	‘	‘	‘
- Public hunting		‘		‘
Monitor for effects of overpopulation		‘	‘	
Protect movement corridors	‘	‘	‘	‘
Monitor fawns			‘	
PRAIRIE DOG MANAGEMENT				
Limit expansion of colonies	-	-	-	-
Monitor size and location of colonies	‘	‘	‘	‘
Exclude from Preble’s habitat	‘	‘	‘	‘
Consider relocations from off-Refuge				‘
Monitor for plague		‘	‘	‘
SPECIES REINTRODUCTION				
Introduce/monitor sharp-tailed grouse	‘	‘	‘	‘
Complete grouse management plan		‘	‘	‘
Monitor native fish reintroduction	-	‘	‘	‘

	A L T E R N A T I V E S			
GOAL 2: PUBLIC USE, EDUCATION AND EDUCATION	A	B	C	D
PUBLIC ACCESS				
Guided tours by arrangement	-		-	
Open public access		·		·
Hiking trails		-	-	-
Allow bicycles and horses on some trails		-		-
INTERPRETATION AND ENVIRONMENTAL EDUCATION				
Implement on-site interpretive programs		·		·
Education programs for school students		-		-
Construct outdoor classroom				·
HUNTING				
Allow youth/disabled hunting		·		·
RECREATION FACILITIES				
Trails		-	-	-
Overlooks		·	-	·
Wildlife viewing blinds		·		·
Visitor contact station		·		
Visitor center				·
GOALS 3, 4 and 5: SAFETY, COMMUNICATION, AND PARTNERSHIPS				
	A	B	C	D
STAFF AND VISITOR SAFETY				
Staff orientation/first aid training	·	·	·	·
Develop a Health and Safety Plan	·	·	·	·
Brief all visitors on safety issues	·		·	
Provide safety information		·		·
OUTREACH AND EMERGENCY RESPONSE				
Distribute Refuge fact sheet	·			
Use several hands-on outreach methods		·	·	·
Coordinate with other agencies		·	·	·
CONSERVATION AND RESEARCH				
Coordinate with other agencies	·	·	·	·
Partner to maintain wildlife corridors		·	·	·
Prioritize research needs		·	·	·
VOLUNTEERS				
Create and implement volunteer program		·		·
GOAL 6: REFUGE OPERATIONS				
	A	B	C	D
STAFFING				
Share staff with Rocky Mountain Arsenal	·	·	·	·
Biological staff	-	-	-	-
Public use staff		-		-
Fire staffing	·	·	·	-
Law enforcement staff		·		·
MANAGEMENT FACILITIES				
Storage/maintenance facility		-	-	-
Small office space on-site	-	·		·
Prepare fire cache	·	·	·	·
CULTURAL RESOURCE MANAGEMENT				
Develop Historic Preservation Plan		·		·
Stabilize Lindsay Ranch barn	·	·		·
Survey following prescribed fire	·	·	·	

2.5. OBJECTIVES AND STRATEGIES

The objectives and strategies are the specific actions that the Service would implement to achieve the goals of the Refuge. An objective is a general statement about what the Service wants to achieve on the Refuge, while a strategy is a specific action, tool, technique or combination of the above used to meet objectives. Because each alternative has a different emphasis, the objectives and strategies would vary by alternative. The following sections provide the objectives and strategies for each alternative. In each alternative, the objectives and strategies are arranged by the six goals discussed under the Goals section in Chapter 1. Several goals were subdivided into topics. For example, Goal 1 addresses wildlife and habitat management. Objectives and strategies within this goal were developed for species reintroduction, deer and elk management, prairie dog management and other topics.

An overview of the management activities that would occur under each alternative is illustrated in Table 4. A detailed summary of the objectives and strategies for each alternative are summarized in Table 6 and the end of Chapter 2.

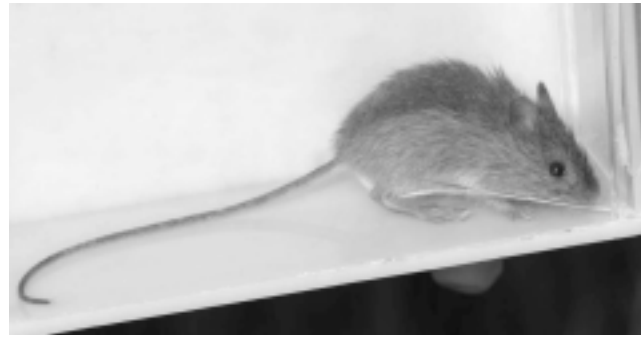
Detailed descriptions of all the proposed management actions are located in the text that follows.

GOAL 1. WILDLIFE AND HABITAT MANAGEMENT

Conserve, restore and sustain biological diversity of the native flora and fauna of the mountain/prairie interface with particular consideration given to threatened and endangered species.

The Refuge supports about 250 species of wildlife and several rare or sensitive plant communities. While some of these species and communities have specific management requirements that are directly addressed in the following objectives, there are many others that are not specifically addressed. These include animals such as the short-horned lizard and red-tailed hawk and rare plants such as the tall upland shrubland community and forktip three awn. The Service will address these species and communities by focusing on sustaining and improving the habitat conditions that support their life processes. For example, the protection and improvement of Preble's meadow jumping mouse habitat (Objective 1.1) would benefit many other species that depend on riparian areas for survival, as well as wetlands and the tall upland shrubland community. Weed management strategies

© Mauro



Preble's meadow jumping mouse is a threatened species found on the Refuge.

(Objective 1.5) would improve habitat conditions for numerous grassland-dependent species, including the short-horned lizard, various ground nesting birds and small mammals, and some rare plants such as the forktip three awn.

While it is not outlined specifically in the objectives, the Service would continue to informally monitor general wildlife populations and rare plant communities on the Refuge. In addition, the Service would work with CDOW, the Colorado Natural Heritage Program, area universities and other partners to ensure that general wildlife and rare plants that are not directly addressed in the objectives are protected and managed on the Refuge.

Objective 1.1—Preble's Habitat Management

Background

As the only known federally listed species that resides on the Refuge, it is the Service's responsibility to protect and conserve the threatened Preble's meadow jumping mouse and its habitat. The life history of this species has not been studied thoroughly. What has been gleaned from habitat studies is that the species is a habitat specialist relying on well-developed shrub-dominated riparian vegetation. Not only riparian areas are utilized; upland shrub and grasslands provide travel corridors, nest sites and forage. The replacement of native vegetation by noxious weeds and excessive grazing is shown to reduce the quality and quantity of suitable Preble's habitat (Compton and Hugie 1993).

Alternative A

Beginning in the first year and throughout the life of the CCP, protect about 1,000 acres of Preble's habitat on the Refuge.

Rationale: The Service is obligated by law and agency policy to protect Preble's habitat where it exists

throughout the Refuge. Currently, about 1,000 acres of riparian, wetland and adjacent grassland habitat areas have the potential to support Preble's. In Alternative A, the Service would manage these areas to prevent the degradation of Preble's habitat on the Refuge.

Strategies:

1.1.1 – Every 2 to 3 years, survey each drainage for the presence/absence and abundance of Preble's using live-traps in randomly selected linear transects parallel to the stream, recording dominant vegetation type at trap locations (Kaiser-Hill 2001).

1.1.2 – Allow natural revegetation of native species on lightly used roads in Preble's habitat including unimproved stream crossings.

1.1.3 – While the species is under the consideration of the ESA, consult with the Service's Ecological Services field office on actions potentially adversely affecting Preble's.

1.1.4 – Develop habitat-sensitive weed management strategies for use in Preble's habitat areas.

1.1.5 – Control noxious weeds in Preble's habitat to prevent an increase in weed distribution and density using IPM tools (biological, mechanical, chemical applications and limited prescribed fire).

Alternative B

Beginning in the first year and throughout the life of the CCP, protect Preble's habitat, maintaining and improving approximately 1,000 acres of Preble's habitat on the Refuge.

Rationale: In Alternative B, the Service would place a priority on the protection and improvement of riparian, wetland and adjacent grassland habitat that have the potential to support Preble's. Preble's have evolved with grazing and browsing by ungulates, especially deer, and under normal circumstances should not be impacted by ungulate behavior. If, however, Refuge deer become overpopulated, over grazing/browsing within riparian areas has the potential to adversely affect Preble's habitat in isolated areas.

Strategies:

1.1.1 – Establish permanent transects in each stream drainage and survey these transects every 2 to 3 years for the presence/absence and abundance of Preble's using live-traps in linear transects parallel to the stream, recording dominant vegetation type at trap locations (Kaiser-Hill 2001; Burnham et al. 1980). Establish exclosures to determine a baseline level of browsing and grazing.

1.1.2-1.1.5 – *Same as A.*

1.1.6 – If necessary, protect Preble's habitat by using fencing and ungulate population control to exclude grazing/browsing animals if the quality of the habitat is threatened.

1.1.7 – Seek partnerships and funding for the performance of biannual surveys for the presence and distribution of Preble's in areas where existing and proposed Refuge recreational trails cross Preble's habitat using live-trapping in grid patterns that encompass the stream and uplands. Record level and type of recreation use in the Preble's survey areas.

1.1.8 – Manage for species recovery as indicated in the Service Recovery Plan (in draft 2003).

Alternative C

Same as B.

Rationale: Same as B.

Strategies:

1.1.1 – Every 3 years survey established trapping transects using line intercept method for foliage density, foliage height diversity and plant species diversity (Kaiser-Hill 2001; Burnham et al. 1980) in the riparian woodlands, riparian and tall upland shrub communities in Preble's habitat. Record dominant vegetation type at trap locations.

1.1.2-1.1.5 – *Same as A.*

1.1.6 – *Same as B.*

1.1.8 – *Same as B.*

Alternative D

Same as B.

Rationale: Same as B.

Strategies:

1.1.1 – *Same as B.*

1.1.2-1.1.4 – *Same as A.*

1.1.5 – Control weeds by biological control and spot mechanical and chemical application each growing season to prevent an increase and density of infestation in Preble's habitat.

1.1.6 – *Same as B.*

1.1.7 – Establish a monitoring plan to determine the effect of trails and recreation activity on Preble's.

Objective 1.2—Xeric Tallgrass Management

Background

Xeric tallgrass prairie is a rare vegetation community type that would be protected, maintained and restored in suitable locations. Tallgrass prairie evolved with the natural processes of fire and grazing, which are important in supporting and invigorating the prairie ecosystem. The disruption of these natural processes renders the prairie community prone to the establishment of noxious weeds that often out-compete native plants. Infested native plant communities are reduced in their capacity to support native wildlife populations. A variety of techniques are needed to restore healthy, balanced native communities. IPM involves using techniques that simulate natural processes and could include: prescribed fire; revegetation with native species; mechanical control methods such as mowing, root grubbing and hand pulling; chemical applications; grazing; and biological agents.

As IPM tools, prescribed fire and grazing are useful in helping to control weeds, reduce plant litter, recycle nutrients and improve the overall health and vigor of the native grasslands. Prescribed fire would be conducted considering state air quality regulations, ecological timing (to maximize benefits to desirable species and effectiveness in controlling weed species), weather conditions and operational logistics. Grazing for ecological restoration purposes would likely consist of managed cattle for short periods of time to simulate natural processes and invigorate native grasses (grazing for the specific purpose of weed control is typically conducted using goats). Monitoring of these treatments and their effectiveness would allow the Service to adapt and alter techniques to improve long-term effectiveness.

Alternative A

Manage the existing extent (about 1,000 acres) of the xeric tallgrass prairie within the Rock Creek Reserve using IPM strategies (as described in Objective 1.5 - *Weed Management*).

Rationale: In Alternative A, the focus would be on controlling weeds throughout the 1,000 acres of xeric tallgrass within the Rock Creek Reserve. In other parts of the Refuge, xeric tallgrass management would be limited to general weed management, as described in Objective 1.5 - *Weed Management*. Prescribed fire within the Rock Creek Reserve would be conducted to stimulate native plant growth, reduce plant litter, and help control weeds in the xeric tallgrass community.

Strategies:

1.2.1 – Within 2 years, produce a long-term vegetation management plan that identifies detailed strategies for weed management, restoration and xeric tallgrass prairie species composition to be attained by the end of the CCP.

1.2.2 – Throughout the growing season, conduct informal monitoring of grasslands for noxious weeds.

1.2.3 – At a minimum, every 3 years survey selected vegetation point intercept transects to determine ground cover, vegetation density, species and species richness, document effectiveness of weed control, assess impacts of disturbance on plant communities, track ratio of warm season to cool season species and provide overall assessment of the status of the tallgrass community (Kaiser-Hill 1997; Owensby 1973). Detailed surveys would be limited to the Rock Creek Reserve.

1.2.4 – Use prescribed fire (in Rock Creek Reserve only), mowing and other restoration tools to stimulate the growth of native plants in the xeric tallgrass community and reduce fuel for wildfire. Grazing would not be used.

1.2.5 – Participate in regional efforts to implement tallgrass prairie conservation measures.

1.2.6 – Suppress all wildfires.

Alternative B

By year 15, manage the existing extent (about 1,500 acres) of the xeric tallgrass prairie across the Refuge to achieve an average relative cover of no less than 60 percent (\pm 4 percent) native grasses and 10 percent (\pm 5 percent) forbs, with no more than 10 percent of the average cover to be invasive non-native species. Maintain the total number of native species to be at least 80 percent of the about 285 plant species that have been identified in the tallgrass community prior to Refuge establishment.

Rationale: Under Alternative B, the focus would be on maintaining and improving the 1,500 acres of xeric tallgrass across the site from the conditions that existed at the time of Refuge establishment. IPM techniques, as described in Objective 1.5 - *Weed Management*, would be used to maintain the native composition of species in the xeric tallgrass communities. While the number of plant species within the community fluctuates annually according to climatic conditions, a total of about 285 species are consistently found within this community. Not meeting the objective as stated above does not necessarily

indicate the xeric tallgrass is critically imperiled but would warrant a more thorough investigation. Prescribed fire would be conducted Refuge-wide to stimulate native plant growth, reduce plant litter and help control weeds in the xeric tallgrass community.

Strategies:

1.2.1-1.2.2 – *Same as A.*

1.2.3 – *Same as A, except:* Surveys would be conducted in xeric tallgrass areas Refuge-wide.

1.2.4 – Use prescribed fire in conjunction with other restoration tools such as grazing, mowing, herbicides and biological controls to simulate natural processes that once existed at Rocky Flats.

1.2.5 -1.2.6– *Same as A.*

1.2.7 – Use prescribed fire in areas identified in Figure 10. Prescribed fire may be used in grassland areas at a average frequency of 5 to 7 years (riparian areas 5 to 10 years). These can occur for two years in a row but not less frequently than once every 10 to 12 years. Burn areas would average about 200 to 500 acres per year of both xeric and mixed grasslands and portions of riparian communities across the site.

1.2.8 – Use grazing in areas identified in Figure 10. Grazing on a specific grassland area would be limited to short duration with high animal numbers (flash grazing for an average of 2 weeks) as identified in the Vegetation and Wildlife Management Plan. Temporary paddocks with electric fencing would be used to contain livestock in specific areas.

1.2.9 – Monitor ecological conditions before and after the application of any specific restoration tool.

1.2.10 – In accordance with Objective 3.2 - *Visitor Safety*, close the Refuge to all public use prior to and during the use of prescribed fire on the Refuge.

Alternative C

Same as B.

Rationale: Same as B.

Strategies:

1.2.1 -1.2.2 – *Same as A.*

1.2.3 –1.2.4 – *Same as B.*

1.2.5 - 1.2.6 – *Same as A.*

1.2.7 -1.2.9 – *Same as B.*

Alternative D

Same as B.

Rationale: Same as B.

Strategies:

1.2.1-1.2.2 – *Same as A.*

1.2.3 – *Same as B.*

1.2.4 – Do not use prescribed fire or grazing. Use other restoration tools such as mowing, herbicides and biological controls.

1.2.5 -1.2.6 – *Same as A.*

Objective 1.3—Mixed Grassland Prairie Management

Background

Nearly one half of the Refuge is vegetated with shortgrass prairie communities, including mesic mixed grassland, xeric needle and thread grassland, short grassland, and reclaimed mixed grassland. While these communities are habitat for a variety of wildlife species on the Refuge, the Service has not outlined very many specific management strategies for the mixed grassland prairie at the Refuge. Instead, management strategies that are important to these prairie communities, including managing weeds, managing prairie dogs, restoring unused roads and sustaining habitat for introduced species, are covered under other wildlife and habitat management objectives. However, because many native wildlife species rely on diverse habitat components that are not present in agricultural fields, hay meadows, or a monoculture of plant species, the Service has outlined specific management strategies related to restoration of these areas. Maintenance and enhancement of these mixed grassland prairie communities is integral to other, more specific objectives.

As outlined in Objective 1.5 - *Weed Management*, a variety of IPM tools, including managed grazing and prescribed fire, would be used to maintain the health and integrity of the mixed grassland prairie communities. Prescribed fire would be conducted considering state air quality regulations, ecological timing (to maximize benefits to desirable species and effectiveness in controlling weed species), weather conditions and operational logistics. Grazing for ecological restoration purposes would likely consist of managed cattle for short periods of time to simulate natural processes and invigorate native grasses (grazing for the specific purpose of weed control is typically conducted using goats). Monitoring of these

treatments and their effectiveness allows for adaptation and alteration of techniques to improve long-term effectiveness.

Alternative A

Through the life of the CCP, maintain and improve the vigor and native species composition of short and mesic mixed grassland habitat according to the management objectives for weed management, prairie dog management, habitat restoration and species reintroduction.

Rationale: The mixed grassland prairie communities at the Refuge provide habitat for a variety of wildlife species. In Alternative A, these communities would be managed according to the specific purposes of other objectives. Prescribed fire would be conducted in the Rock Creek Reserve to stimulate native plant growth, reduce plant litter and help control weeds in the mixed grassland prairie communities.

Strategies:

1.3.1 – Use IPM strategies to control or reduce noxious weed infestations and maintain or improve the vigor of native short and mesic grassland according to Objective - 1.5 *Weed Management* and Objective 1.4 - *Road Restoration and Revegetation*.

1.3.2 – Allow short and mesic grassland communities to support prairie dog expansion, according to Objective 1.7 - *Prairie Dog Management*.

1.3.3 – Maintain short and mesic grassland communities as needed to support the reintroduction of sharp-tailed grouse or other species, as directed under Objective 1.8 - *Species Reintroduction*.

1.3.4 – Suppress all wildfires.

1.3.5 – Use prescribed fire (in Rock Creek Reserve only), mowing and other restoration tools to stimulate the growth of native plants in the mixed grassland prairie communities and reduce fuel for wildfire. Grazing would not be used.

Alternative B

Same as A, except restore 300 acres of non-native grassland in the southeast corner of the Refuge (hay meadow), as well as other reclaimed grassland areas, to a native mixed grassland community.

Rationale: The mixed grassland prairie communities at the Refuge provide habitat for a variety of wildlife species. In Alternative B, the Service would restore non-native grassland areas, including the hay meadow, to improve the diversity of habitat for a variety of

species. In addition, the mixed grassland prairie communities would be managed according to the specific purposes of other objectives. Prescribed fire would be conducted Refuge-wide to stimulate native plant growth, reduce plant litter and help control weeds in the mixed grassland prairie communities.

Strategies:

1.3.1-1.3.4 – *Same as A.*

1.3.5 – Use prescribed fire in conjunction with other restoration tools such as grazing, mowing, herbicides and biological controls to simulate natural processes that once existed at Rocky Flats.

1.3.6 – Restore non-native reclaimed grasslands in the hay meadow and other areas to a native mixed grassland community.

1.3.7 – Use prescribed fire in areas identified in Figure 10. Prescribed fire may be used in grassland areas at a average frequency of 5 to 7 years (riparian areas 5 to 10 years). These can occur for two years in a row but not less frequently than once every 10 to 12 years. Burn areas would average about 200 to 500 acres per year of both xeric and mixed grasslands and portions of riparian communities, across the site.

1.3.8 – Use grazing in areas identified in Figure 10. Grazing on a specific area would be limited to short duration with high animal numbers (flash grazing for an average of 2 weeks) as identified in the Vegetation Management Plan. Temporary paddocks with electric fencing would contain the livestock in specific areas.

1.3.9 – Monitor ecological conditions before and after the application of any specific restoration tool.

1.3.10 – In accordance with Objective 3.2 - *Visitor Safety*, close the Refuge to all public use prior to and during the use of prescribed fire on the Refuge.

Alternative C

Same as B.

Rationale: Same as B.

Strategies:

1.3.1-1.3.4 – *Same as A.*

1.3.5 -1.3.10– *Same as B.*

Alternative D

Same as A.

Rationale: Same as A.

Strategies:

1.3.1-1.3.4 – Same as A.

Objective 1.4—Road Restoration and Revegetation**Background**

Currently about 70 miles of roads occur at the Refuge (of which about 20 miles will remain under DOE's jurisdiction). The removal and revegetation of extraneous roads would provide more wildlife habitat and reduce the effects of fragmentation. Fragmentation results from roads, trails and other disturbances interrupting continuous habitat with unsuitable and possibly hostile environments. Fragmentation can affect plants and animals, resulting in the isolation of populations or individuals, reduction of genetic diversity, reduction of carrying capacity and other effects. Roads provide corridors for predators and are prone to weed infestations. Abrupt vegetation changes at road edges alter light, temperature and wind exposure. Revegetation and the restoration of natural contours, either by natural succession or mechanical grading, would increase the quality and quantity of native wildlife and plant habitats.

In all alternatives, the Service would retain about 25 miles of roads for maintenance, fire control, utility and ecological monitoring access. In some cases, the roads would also be used as trails. Unless designated otherwise, access roads would be closed to public use.

Alternative A

Beginning in the first 3 years and completed during the life of the CCP, revegetate—in the Rock Creek Reserve—12 miles of unused roads with seven stream crossings.

Rationale: The 2001 Rock Creek Reserve Integrated Natural Resources Management Plan (DOE 2001) calls for the removal and revegetation of unused roads within the Rock Creek Reserve. In Alternative A, the roads in the Rock Creek Reserve would be restored and revegetated, while the roads in the remainder of the Refuge would be left in place.

Strategies:

1.4.1 – Allow natural revegetation of native species on lightly used roads and unimproved stream crossings, in areas not dominated by weeds.

1.4.2 – In select locations, prepare (including soil prep, culvert removal, fill, regrading to match original contours, herbicide application) and seed roadways and uplands with native species appropriate to soil type, slope and aspect.

1.4.3 – Where suitable, revegetate stream crossings with woody riparian species.

1.4.4 – Informally survey roadways for noxious weeds during the growing season and apply IPM techniques.

1.4.5 – Work with the Service's Ecological Services office and other agencies for ESA consultation and necessary permits in Preble's habitat and wetlands and adjacent buffer zones.

Alternative B

Beginning in the first year and completed within the life of the CCP, revegetate approximately 26 miles of unused roads with 13 stream crossings. This would include about 7 miles of xeric tallgrass habitat and about 11 miles of mixed grassland prairie.

Rationale: In Alternative B, roads across the Refuge that are not being used for public use, fire protection, or maintenance access, would be restored and revegetated, while others would be narrowed to the width of a trail.

Strategies:

1.4.1-1.4.5 – Same as A.

1.4.6 – Every 3 years survey restored habitat areas along selected vegetation point intercept transects to determine ground cover, vegetation density, species and species richness; document effectiveness of weed control; assess impacts of disturbance on plant communities; and provide overall assessment of the vegetation community and restoration success (Kaiser-Hill 1997; Owensby 1973).

© Neilson, RFETS



Prescribed fire would be used as a management tool in Alternatives A, B and C.

Alternative C

Beginning in the first year and within the first 10 years, revegetate about 26 miles of unused roads with 13 stream crossings. This would include about 8 miles of xeric tallgrass habitat and about 11 miles of mixed grassland prairie.

Rationale: In Alternative C, restore and revegetate to a pre-settlement condition almost all roads not needed for fire or Refuge access.

Strategies:

1.4.1-1.4.5 – *Same as A.*

1.4.6 – *Same as B.*

Alternative D

Beginning by year 3 and completed within the life of the CCP, revegetate approximately 24 miles of unused roads with 6 stream crossings. This would include about 7 miles of xeric tallgrass habitat and about 12 miles of mixed grassland prairie.

Rationale: *Same as B.*

Strategies:

1.4.1-1.4.5 – *Same as A.*

1.4.6 – *Same as B.*

Objective 1.5—Weed Management**Background**

Noxious weeds are nonnative plant species that invade an area that has been disturbed or where vegetation is stressed. Noxious weed infestations reduce the capacity of native plant communities to support wildlife populations and a diversity of organisms. Soil disturbances and cessation of the natural processes such as fire and grazing have resulted in a proliferation of noxious weed species at Rocky Flats.

IPM involves techniques that simulate the processes that contribute to the integrity of the ecosystems and can be applied when conditions are optimum for greatest effectiveness: prescribed fire; revegetation with native species; mechanical methods of mowing, root grubbing and hand collection; chemical applications; and biological agents. Depending on the location and treatment, controlled grazing by goats or cattle can be used as ecological restoration tools (as discussed in Objective 1.2 - *Xeric Tallgrass Management*) or for weed management purposes.

Monitoring the effectiveness of treatment allows adaptation and alterations of techniques to improve long-term effectiveness. Diffuse knapweed and

Dalmatian toadflax are the principal threats to the grasslands, while Canada thistle threatens wetlands and riparian areas. Weed management efforts will seek to prevent the spread of existing infestations and the establishment of new ones.

In accordance with the Colorado Noxious Weed Act, the control of “list B” noxious weed species such as Diffuse knapweed, Dalmatian toadflax, and Canada thistle would be prioritized over the control of “list C” species such as field bindweed and jointed goatgrass. Biological controls would be planned to minimize potential impacts to native species.

Alternative A

In the Rock Creek Reserve, reduce the density of diffuse knapweed and Dalmatian toadflax populations by 15 percent within the first 5 years, 25 percent within 10 years and 50 percent within 15 years (as described in Kaiser-Hill 2002). Reduce the density and control the spread of other noxious weed species, especially Canada thistle by 50 percent within 15 years. Prevent the establishment of weed species (Jefferson County, Boulder County and State of Colorado weed lists) not yet observed on the Refuge. For the Refuge outside of Rock Creek, limit and control the spread and density of existing weed infestations beginning in the first year.

Rationale: In Alternative A, staff resources would concentrate weed reduction efforts in the Rock Creek Reserve while attempting to limit the expansion of weeds over the rest of the Refuge. Although the Rock Creek Reserve management plan (DOE 2001) did not specify weed reduction targets, the Service has established targets for the Rock Creek Reserve.

Strategies:

1.5.1 – Employ an IPM approach to include the application of herbicides to perimeters of knapweed and toadflax patches to prevent their spread. Redistribute established biological control agents across the Rock Creek drainage and continue releases. Rake along fence lines and dispose of all tumbleweeds. Grub and handpull where needed.

1.5.2 – Annually identify and map weed patches using a Global Positioning System (GPS) to demarcate the areal extent and relative severity of infestations. Map treatment sites and monitor for efficacy in subsequent growing season.

1.5.3 - Correlate weed management with prairie dog management to minimize weed infestations in prairie dog expansion areas.

Alternative B

Reduce the density of diffuse knapweed and Dalmatian toadflax populations by 15 percent within the first 5 years, 30 percent within 10 years and 60 percent within 15 years (as described in Kaiser-Hill 2002). Reduce the density and spread of other noxious weed species, especially Canada thistle by 50 percent within 15 years. Limit and control the establishment of weed species (Jefferson County, Boulder County and State of Colorado weed lists) not yet observed on the Refuge.

Rationale: In Alternative B, the full range of IPM tools, including chemical, biological and mechanical control, prescribed fire and grazing, would be available to reduce noxious weed concentrations throughout the Refuge. Prescribed fire would be subject to an approved fire management plan and state air quality regulations. Grazing also would be subject to an approved plan. Burning along fence lines would reduce seed spread of noxious weeds, and the removal of plant litter would reduce the amount of herbicide that would be required to control weed infestations in that area.

Strategies:

1.5.1-1.5.3 – *Same as A.*

1.5.4 – Develop a comprehensive IPM plan.

1.5.5 – Conduct annual informal survey for new infestations during the growing season, focusing on roadways, trails, restoration areas and disturbed sites.

1.5.6 – If necessary, establish temporary interior fencing in areas where weeds are wind dispersed to collect weeds and limit dispersal. Burn along fence lines and dispose of all tumbleweeds.

1.5.7 – Use managed grazing of goats, or other livestock as appropriate for short periods to control weed infestations and simulate natural grassland processes.

Alternative C

Same as B.

Rationale: Same as B.

Strategies:

1.5.1-1.5.3 – *Same as A.*

1.5.4 -1.5.7 – *Same as B.*

Alternative D

Same as B, except reduce diffuse knapweed and Dalmatian toadflax by 10, 15 and 30 percent within 5,

10 and 15 years, respectively (instead of 15, 30 and 60 percent).

Rationale: Same as B, except prescribed fire and grazing would not be used.

Strategies:

1.5.1-1.5.3 – *Same as A.*

1.5.4 – *Same as B.*

Objective 1.6— Deer and Elk Management**Background**

CDOW has primary responsibility for the management of deer and elk herds throughout the state and cooperated with the DOE for wildlife management at Rocky Flats before Refuge establishment. CDOW strives to set population levels at 80 percent carrying capacity, but the Service believes that setting a target population level for the Refuge will provide for better management of the ungulate population and would present fewer difficulties in determining what the carrying capacity should be. The resulting target population level may be lowered if degradation is occurring in Preble's habitat (riparian and upland shrubs). Continued cooperation with the CDOW will provide continuity in management, sharing of resources and provide larger habitat areas for deer and elk. Management of deer and elk populations is necessary to maintain the health of the herds and prevent the degradation of sensitive habitats such as riparian woodlands and shrublands and tallgrass prairie.

Alternative A

Work with CDOW to establish target populations and manage deer and elk populations as needed to prevent overpopulation, the spread of disease and adverse impacts to Preble's habitat.

Rationale: In Alternative A, due to limited resources, the Service would cooperate with CDOW's population management efforts on the Refuge. The Service would seek the assistance of CDOW in the event that deer populations excessively degrade Preble's habitat, or if chronic wasting disease or any other wildlife concern is suspected on the Refuge.

Strategies:

1.6.1 – Work with CDOW in population monitoring and control through culling and other methods.

1.6.2 – Assist CDOW in establishing target populations for deer and elk on the Refuge.

1.6.3 – Every 2 years monitor for ungulate induced degradation using multiple methods for foliage

density, foliage height diversity and plant species diversity (Anderson and Ohmart 1986) in the riparian woodlands, riparian and tall upland shrub communities in Preble's habitat.

Alternative B

Within 3 years, establish deer and elk population targets to be achieved by year five. Adverse effects to Preble's or other federally endangered or threatened species and their habitats may necessitate reduced population target levels.

Rationale: In Alternative B, a public hunting program may be all that is necessary to control the herd size; however, additional culling by Refuge staff and CDOW, or keeping the herd away from sensitive habitat areas with exclosures or temporary fencing may be required. The Service would correlate the establishment of population targets with the public hunting program to maximize the utility of hunting as a management tool and to ensure that it does not adversely impact populations.

Strategies:

1.6.1 – Coordinate and assist CDOW to monitor and manage populations through a public hunting program, culling by Refuge or CDOW personnel, or temporary exclosures.

1.6.2-1.6.3 – *Same as A.*

1.6.4 – Perform annual deer and elk relative abundance or relative density study by direct count.

1.6.5 – Establish permanent vegetation photo points in riparian and upland shrubs and use them to monitor for excessive habitat degradation by ungulates every 2 years. Establish exclosure plots to determine the extent of browsing.

1.6.6 – Work with other agencies to protect movement corridors between the Refuge and nearby habitat areas.

Alternative C

Same as B.

Rationale: In Alternative C, no public hunting or culling of the herd would be permitted. Other strategies including temporary fencing may be required.

Strategies:

1.6.1 – *Same as B*, except coordinate and assist CDOW to manage populations using culling and other strategies (public hunting would not be used).

1.6.2- 1.6.3 – *Same as A.*

1.6.4 – Seasonally monitor ungulate distribution and movement patterns by direct count.

1.6.5- 1.6.6 – *Same as B.*

1.6.7 – Annually survey by direct count population number, composition, fawning rate and fawn survival.

Alternative D

Same as B.

Rationale: A public hunting program may be all that is necessary to control the herd size, but additional culling by Refuge staff may be required to keep herd size within target population limits. Due to the number of resources being used to accomplish public use and restoration objectives, it may take longer to establish and achieve population targets. The Service would correlate the establishment of population targets with the public hunting program to maximize the utility of hunting as a management tool and to ensure that it does not adversely impact populations.

Strategies:

1.6.1 – *Same as B.*

1.6.2 – *Same as A.*

1.6.3 – *Same as A*, except monitor every 3 years (instead of every 2 years).

1.6.4 – *Same as B.*

Objective 1.7—Prairie Dog Management

Background

Prairie dogs are important components in the short and mesic grasslands systems. They are commonly considered a "keystone" species because their activities (burrowing and intense grazing) provide food and shelter for many other grassland species. While black-tailed prairie dogs are no longer a candidate species for threatened status listing under the ESA (as of August 2004) the Service still has a strong interest in conserving the species and habitat where appropriate.

Rocky Flats contains about 2,460 acres of potential prairie dog habitat, based on an analysis of suitable soils, vegetation, and slope. While about 113 acres of prairie dog colonies have been identified in recent years, active prairie dog colonies at Rocky Flats currently comprise an area of about 10 acres. Thresholds for prairie dog expansion in the various alternatives are based on these existing conditions and the extent of potential habitat.

Alternative A

Allow prairie dog populations to expand naturally across the Refuge outside of recognized Preble's habitat.

Rationale: In Alternative A, the Service would depend on natural habitat conditions and predation to regulate the size and location of prairie dog colonies. If prairie dogs colonize and degrade Preble's habitat areas (such as wetlands and riparian grasslands), the Service would consider relocation to more suitable habitat areas on the Refuge.

Strategies:

1.7.1 – Trap and relocate on site, or use other methods to exclude prairie dogs from Preble's habitat in the Rock Creek Reserve.

1.7.2 – Use intra-Refuge relocation as required.

1.7.3 – Do not accept prairie dogs from off-Refuge relocation projects.

1.7.4 – Cooperate with DOE's stewardship designee to manage prairie dogs on DOE retained lands through visual and vegetative barriers where necessary.

1.7.5 - Correlate prairie dog management with weed management efforts to minimize weed infestations in prairie dog expansion areas.

Alternative B

Allow prairie dog populations to expand up to 750 acres in areas of non-native grassland as well as short and mixed native grasslands outside of recognized Preble's habitat across the Refuge

Rationale: Restoration is a key component of Alternative B. The Service would manage for a sustainable prairie dog population that contributes to the overall function and integrity of the grassland communities and does not degrade other sensitive resources (such as wetlands, shrublands and xeric tallgrass prairie). With limited staff resources, it could be difficult to limit prairie dog expansion if they populate large areas, so it is important that the Service maintain a manageable prairie dog population on the Refuge. If necessary, the Service would try to limit the expansion of prairie dogs into sensitive areas that do not provide primary habitat for prairie dogs. Because human recreation is a significant component of Alternative B, plague control methods may be needed in prairie dog management to protect prairie dog colonies as well as Refuge visitors.

Strategies:

1.7.1 – If necessary, trap and relocate within the Refuge, or use other methods to exclude prairie dogs

from Preble's habitat and xeric tallgrass throughout the Refuge.

1.7.2-1.7.5 – *Same as A.*

1.7.6 – Annually monitor and map the location, extent and distribution of prairie dog populations including densities and vegetation characteristics within prairie dog towns.

1.7.7 – Annually monitor for plague and respond with flea control if appropriate.

Alternative C

Same as B, except allow prairie dog populations to expand up to 500 acres.

Rationale: With the limited staff resources in Alternative C, it could be difficult to limit prairie dog expansion if they populate large areas. Because of the emphasis on ecological restoration of the site to a pre-settlement condition in this alternative, large expansion of prairie dogs would be limited to the extent possible until restoration is completed. The integrity of the xeric tallgrass and riparian woodland, riparian shrublands and uplands considered Preble's habitat across the site would be protected.

Strategies:

1.7.1 – *Same as B.*

1.7.2-1.7.5 – *Same as A.*

1.7.6 – *Same as B.*

1.7.7 – Informally monitor for the presence of plague and consult with local public health officials.

Alternative D

Same as B, except allow prairie dog populations to expand up to 1,000 acres.

Rationale: With the emphasis on providing more public use opportunities in Alternative D, prairie dogs would be allowed to populate larger areas than in Alternatives B and C recognizing that it could be difficult to limit prairie dog expansion if they populate large areas. To the extent possible, the integrity of the xeric tallgrass and riparian woodland, riparian shrublands and uplands considered Preble's habitat across the site would be protected. Because human recreation is a significant part of Alternative D, plague control methods would be used in prairie dog management to protect prairie dogs and visitors.

Strategies:

1.7.1 – *Same as B.*

1.7.2 – *Same as A.*

1.7.3 – Evaluate the suitability of accepting prairie dogs from off-site locations.

1.7.4 -1.7.6 – *Same as A.*

1.7.7 – *Same as B*, except annually monitor and quantify prairie dog populations, but do not monitor densities and vegetation characteristics within prairie dog towns.

1.7.8 – *Same as B.*

Objective 1.8—Species Reintroduction

Background

CDOW holds the primary responsibility for wildlife management in Colorado and cooperated with the DOE for wildlife management on Rocky Flats before Refuge establishment. CDOW, through a cooperative effort with City of Boulder, introduced a small number of plains sharp-tailed grouse just north of the Refuge on Boulder’s open space land during spring 2003 and is interested in expanding the introduction of the grouse onto the Refuge. The Service worked with CDOW to introduce northern redbelly dace and the common shiner in Rock Creek during summer 2003.

Alternative A

During the 15-year life of the CCP, facilitate and assist reintroduction of native extirpated species by, or in coordination with, the CDOW. Implement population monitoring of existing reintroductions (redbelly dace, common shiner) and any new reintroductions until successfully established.

Rationale: In Alternative A, Service cooperation with CDOW on introductions/reintroductions would provide continuity in management, sharing of resources and benefit the ecosystems and native communities present on the Refuge. The Service, however, would not take a leading role in species reintroduction. An alternating year monitoring program would enable the limited staff resources to rotate population monitoring.

Strategies:

1.8.1 – Coordinate with CDOW to introduce and monitor plains sharp-tailed grouse.

1.8.2 – Coordinate with CDOW in species release, monitoring and habitat maintenance needs on the Refuge.

1.8.3 – Coordinate with CDOW on monitoring native fish reintroduction (northern redbelly dace and

common shiner) in Rock Creek, until they are successfully established.

Alternative B

Within 3 years of Refuge establishment, evaluate the suitability for introducing/reintroducing plains sharp-tailed grouse and other native species, prioritize the species that could be introduced/reintroduced during the life of the CCP and implement population monitoring of reintroduced species at least annually until populations are established.

Rationale: In Alternative B, a full evaluation of Refuge habitat suitability is needed before introductions/ reintroductions are planned. Service staff would play an active role in evaluating the suitability of reintroduction efforts and would partner with CDOW to manage implementation. Population monitoring by Service staff would be implemented as necessary.

Strategies:

1.8.1 – Coordinate with and assist CDOW in evaluating the suitability of the Refuge for plains sharp-tailed grouse and other native species.

1.8.2 – Oversee and assist CDOW with species release, monitoring and habitat maintenance on the Refuge.

1.8.3 – Annually monitor native fish (northern redbelly dace and common shiner) in Rock Creek. If needed, reintroduce them in the Walnut Creek drainage and Woman Creek (provided suitable habitat exists), until successful establishment.

1.8.4 – If found suitable for introduction, during the first 2 years of the CCP, complete a management plan for the plains sharp-tailed grouse.

Alternative C

Same as B, except within 3 years, remove the introduced common shiner and redbelly dace from the Lindsay Ranch ponds and determine if they can be relocated elsewhere on the Refuge (in order to restore the ponds to native wetlands).

Rationale: Similar to Alternative B, Service staff would partner with CDOW to evaluate the suitability of reintroduction efforts and implement and monitor those efforts. With the focus on ecological restoration of the site to pre-settlement conditions under Alternative C, stocked native fish populations in the Lindsay Ranch ponds would need to be transplanted to the other drainages (on site, if possible) and the ponds restored to a native wetland condition.

Strategies:

1.8.1-1.8.4 – Same as B.

Alternative D

During the first 3 years of the 15-year CCP, complete an evaluation of the Refuge's suitability for the reintroduction of plains sharp-tailed grouse and implement population monitoring.

Rationale: In Alternative D, additional resources would be focused on providing a full range of public use opportunities and aside from the grouse and native fish, no other reintroductions/introductions would be proposed.

Strategies:

1.8.1 – Same as B.

1.8.2 – Same as B, except coordinate with and assist CDOW (but not oversee CDOW).

1.8.3 – Same as B.

GOAL 2. PUBLIC USE, EDUCATION AND INTERPRETATION

Provide visitors and students high quality recreational, educational and interpretive opportunities and foster an understanding and appreciation of the Refuge's xeric tallgrass prairie, upland shrub and wetland habitats; native wildlife; the history of the site; and the NWRS.

Objective 2.1—Visitor Experience**Alternative A**

For the life of the CCP, provide guided interpretive tours for less than 300 visitors annually (less than 2 tours a month). During their visit, 90 percent of site visitors would be informed about the safety steps that were taken prior to Refuge establishment.

Rationale: In this alternative general public access is restricted. The only public use permitted would be organized guided tours of the Refuge. Because Service staff would accompany all visitors, all visitors would enjoy a safe, informative tour of select high-quality resource areas within the Refuge. In an effort to make visitors feel safe, all tours would include information about the steps that were taken to ensure safety prior to Refuge establishment. One survey would be developed to measure all visitor experiences and would include questions related to use patterns, satisfaction and understanding of the resource (as referred to in objectives 2.1, 2.2, 2.3, 2.4 and 2.5).

Strategies:

2.1.1 – Develop a guideline and reservation system to manage public use and arrange tours.

2.1.2 – Provide a staff contact for every tour to explain the site's history and resources as well as the Refuge System's mission and help ensure that visitors feel safe during their visit.

2.1.3 – Develop a survey to measure the quality of the visitor experience.

Alternative B

Within the first 5 years of the Refuge's establishment, the Service would initiate efforts to make Refuge visitors feel safe and would ensure that at least 75 percent of visitors would be informed about the safety steps that were taken prior to Refuge establishment.

Rationale: Access to the Rocky Flats site has been highly restricted during both the nuclear production and the cleanup phases of the site's history. A substantial amount of public skepticism about the site's safety and a lack of familiarity with the site's resources are likely to hamper visitation. To ease public apprehension about the site, it would be crucial to ensure that visitors feel welcome, safe and comfortable. During focus groups about visitor use and outreach programs, specialists emphasized the importance of communicating with the public and explaining cleanup results and ongoing safety measures. One survey would be developed to measure all visitor experiences and would include questions related to use patterns, satisfaction and understanding of the resource (as referred to in objectives 2.1, 2.2, 2.3, 2.4 and 2.5).

© Mauro



Refuge tours, open visits and interpretive programs would increase public awareness of the Refuge system.

Strategies:

2.1.2 – Provide a staff contact during peak seasons to welcome visitors and address safety concerns.

2.1.3 – Develop a survey designed to measure how safe visitors feel during their visit.

2.1.4 – Develop an outreach program that reaches beyond the site’s boundaries and educates surrounding communities about the Refuge’s safety and amenities.

2.1.5 – Use signage, staff contact, brochures, website and other means to convey safety information.

2.1.6 – Implement a volunteer program focused on helping the public and site visitors understand efforts that have been made to ensure the safety of site users.

2.1.7 – Keep surrounding communities including, but not limited to, Jefferson, Boulder and Broomfield counties, the cities of Westminster, Arvada, Boulder, Golden and Broomfield and nearby school districts informed about Refuge events and the progress of the CCP’s implementation.

Alternative C

For the life of the CCP, provide guided interpretive tours for less than 1,000 visitors annually. During their visit, 90 percent of site visitors would be informed about the safety steps that were taken prior to Refuge establishment.

Rationale: The primary emphasis for this alternative is ecological restoration and protection with limited public use. All public use would be through arranged tours including classes and other research groups. Visitor numbers would be low because Refuge’s funding would be directed primarily toward resource preservation and restoration rather than visitor use. Because Service staff would accompany all visitors, they would enjoy a safe, informative tour of select high quality resource areas within the Refuge. In an effort to make visitors feel safe, all tours would include information about the steps that were taken to ensure safety prior to Refuge establishment. One survey would be developed to measure all visitor experiences, using questions related to use patterns, satisfaction and understanding of the resource (as referred to in objectives 2.1, 2.2, 2.3, 2.4 and 2.5).

Strategies: Same as A.

Alternative D

Same as B.

Rationale: Same as B.

Strategies: Same as B.

Objective 2.2—Public Access

Alternative A

Initiate limited guided tours (fewer than 300 visitors annually) of the Refuge within the first year of the Refuge’s establishment and provide opportunities for wildlife observation, photography and limited interpretation. The tours would be conducted throughout the life of the CCP. About 75 percent of visitors would report satisfaction with their guided Refuge experience.

Rationale: Visitor access and wildlife-dependent uses would only be permitted on a guided tour. Site tours would provide visitors the opportunity to view unique xeric tallgrass prairie, upland shrub and wetland habitats and to understand the site’s history and the NWRS. Hunting, equestrian and bicycling uses would not be permitted. In all alternatives, dogs would be prohibited on the Refuge because they pose a threat to the wildlife resources on the Refuge. In order to minimize disturbances to the natural environment, visitors would be restricted to designated areas.

Strategies:

2.2.1 – Develop and implement a survey that measures visitor satisfaction and use patterns.

2.2.2 – Do not permit dogs on the Refuge.

2.2.3 – Use existing roads as routes for the tour. No trail or other visitor use facilities would be developed.

Alternative B

By the end of 15 years, visitors would have opportunities to observe and photograph wildlife and to experience the Refuge’s unique habitats, mountain and prairie views on foot, bike and horse. Satisfaction with their Refuge experience would be reported by 75 percent of visitors.

Rationale: One of the goals of the Refuge System is to foster an understanding of wildlife and its habitat by providing the public with safe, high quality, wildlife-dependent public uses. The Refuge provides opportunities for the public to experience the unique xeric tallgrass prairie, upland shrub, wetland habitats and learn about the site’s history and the NWRS. Trails and overlooks would be designed to allow visitors to experience the diverse areas of the site and expansive views of the mountain backdrop and the Denver/Boulder metropolitan area.

Off trail use would be allowed on a seasonal basis for pedestrian access only in the southern portion of the Refuge during specific times of the year (October-April). Limiting off trail use to the late fall and winter would limit impacts to ground nesting birds and deer fawning in the uplands. Off trail use would provide opportunities for amateur naturalists, wildlife photographers and others to access their subjects.

To protect Preble's and other wildlife habitat, closures in the Rock Creek area and other drainages would be instituted on an as needed basis. Overlooks, however, would remain open and provide views into the riparian areas. Dogs would be prohibited on the Refuge because they are permitted on nearby open spaces and pose a threat to wildlife resources.

Strategies:

2.2.1-2.2.2 – *Same as A.*

2.2.3 – Develop trails to provide multiple opportunities for viewing and photographing wildlife.

2.2.4 – Allow off-trail use in the southern portion of the Refuge (south of Woman Creek) between October and April.

2.2.5 – Establish seasonal trail closures in Rock Creek and other drainages as necessary to minimize impacts to wildlife. Keep portions of the rim trails open for viewing the riparian areas.

2.2.6 – Provide a seasonally staffed visitor contact station to inform visitors about the Refuge's resources and how to best experience the Refuge during different seasons.

2.2.7 - Open the Refuge to the public from sunrise to sunset.

2.2.8 - Maintain public access on the main access road only. Close all other roads to public access.

2.2.9 - Do not permit motorized vehicles on the Refuge except in designated parking/access areas, refuge maintenance access and access to utility easements, ditches, and private mineral rights.

Alternative C

Initiate limited guided tours (limited to 1,000 visitors annually) of the Refuge within the first year of the Refuge's establishment and provide limited opportunities for wildlife observation, photography and interpretation. The tours would be conducted throughout the life of the CCP. About 75 percent of visitors would report satisfaction with their guided Refuge experience.

Rationale: Same as A.

Strategies:

2.2.1-2.2.2 – *Same as A.*

2.2.10 – Provide the minimum amount of public use facilities, including trails and overlooks, to allow visitors to obtain views of key resource areas while minimizing impacts to wildlife.

2.2.11 – Minimize the scale of all facilities, where appropriate, place them in previously disturbed areas.

Alternative D

Throughout the life of the CCP, visitors would have opportunities to observe and photograph wildlife and to experience the Refuge's unique habitats and mountain and prairie views. About 75 percent of visitors would report satisfaction with participation in a wide range of wildlife dependent recreational uses.

Rationale: Same as B.

Strategies:

2.2.1-2.2.2 – *Same as A.*

2.2.3-2.2.5 – *Same as B.*

2.2.6 – Provide a staffed visitor center to inform visitors about the Refuge's resources and opportunities for experiencing the Refuge.

2.2.7-2.2.9 – *Same as B.*

© Shapins Associates



Refuge access would be limited to guided tours in Alternatives A and C.

Objective 2.3—Appreciation of the National Wildlife Refuge System

Alternative A

For the life of the CCP, 90 percent of the visitors who are allowed site access would understand and appreciate the NWRS mission, the purpose of the Refuge and most importantly, the natural and cultural resources of the Refuge.

Rationale: All visitors would be on guided tours with knowledgeable staff that would explain the NWRS mission, the purpose of the Refuge and the resources of the Refuge.

Strategies:

2.3.1 – Keep Refuge visitation very low and provide staff contact on all tours. Adjust visitation limits as needed to minimize impacts on Refuge resources.

2.3.2 – Develop a visitor use tracking system to measure the number of visitors. Use it in conjunction with the visitor experience survey to identify changes needed to improve the visitor’s experience.

2.3.3 – Distribute a survey to tour participants every 7 years (twice during the life of the CCP). Distribute the survey over the course of a year to ensure that feedback is collected during all four seasons.

Alternative B

By the end of the CCP, 65 percent of visitors would understand and appreciate the NWRS, the purpose of the Refuge and the natural and cultural resources of the Refuge.

Rationale: Given the drastic shift in the use of Rocky Flats from nuclear weapons production to a wildlife refuge, the public is unfamiliar with the site’s new mission and its natural resources. As people begin to feel safe and comfortable with accessing the Refuge, the Service would strive to foster public awareness and appreciation of the Refuge System and the purpose of the Refuge. The Refuge’s proximity to urban areas presents a good opportunity to educate a large number of people about the NWRS and its role in conservation across the country.

Strategies:

2.3.1 – Include questions in the visitor surveys and questionnaires (strategy 2.2.1) that measure visitors’ understanding of the NWRS and the Refuge’s resources.

2.3.2 – Create the interpretive media and programs identified in the environmental education component

of the Visitor Services Plan, a step-down plan that will outline visitor services in more detail than the CCP.

2.3.3 – Work with outside partners to ensure visitors understand the Refuge’s natural and cultural resources. Potential partners include the CDOW, surrounding city and county environmental education entities (government, non-profit and profit), Cold War Museum, Boulder and Jefferson County high schools and the State Historic Preservation Office.

2.3.4 – During peak seasons, provide adequate personnel to ensure that staff contact is available to visitors.

2.3.5 – Develop an interpretive signage system that educates visitors about the natural and cultural resources at the Refuge.

2.3.6 - Educate visitors about the National Wildlife Refuge System.

Alternative C

For the life of the CCP, 90 percent of the visitors who are allowed Refuge access would understand and appreciate the NWRS mission, the purpose of the Refuge and most importantly, the natural and cultural resources of the Refuge.

Rationale: Same as A.

Strategies:

2.3.1-2.3.2 – Same as A.

2.3.3 – Same as A, *except:* distribute a survey to tour participants every 5 years (three surveys during the life of the CCP). Distribute the survey over the course of a year to ensure that feedback is collected during all four seasons.

Alternative D

By the end of the CCP, 50 percent of visitors would understand and appreciate the NWRS mission, the purpose of the Refuge and the natural and cultural resources of the Refuge.

Rationale: Same as B, *except.* Alternative D would offer the greatest amount of public use programs and likely attract the most visitors. Given the increased number of visitors, Refuge staff would not be able to communicate personally with as many people; therefore, the percentage of visitors who develop an understanding and appreciation of the Refuge System and the Refuge’s legislated purpose would be lower than in Alternatives B and C.

Strategies: Same as B.

Objective 2.4—Public Use Tracking**Alternative A**

Not applicable to Alternative A.

Alternative B

Within the first year of the Refuge's establishment, open a pedestrian-only trail to Lindsay Ranch and monitor the number of visitors to the Refuge. During years 5 through 7, as more trails are opened, develop baseline data for numbers of visitors and their use patterns.

Rationale: The Refuge has not been open to the public; therefore, no visitor use data exists. Establishing quality baseline data is needed for future management decisions. A quantitative understanding of visitor activity (numbers of visitors, trail and use patterns) combined with an analysis of the quality of their experience would allow Service staff to enhance or limit visitor use opportunities.

Strategies:

2.4.1 – Develop a visitor use tracking system to measure the number of visitors. Use it in conjunction with a visitor experience survey to identify changes needed to improve the visitor's experience.

2.4.2 – Use trail or vehicle counters to record Refuge visitor numbers.

2.4.3 - Use the results of tracking to guide the design and planning of public use facilities and programs.

Alternative C

Not applicable to Alternative C.

Alternative D

Within the first 2 years of establishment, determine baseline data for numbers of visitors and their use patterns.

Rationale: Same as B.

Strategies: Same as B.

Objective 2.5—Public Use Assessments**Alternative A**

Not applicable to Alternative A.

Alternative B

By the end of the CCP, 25 percent of visitors would demonstrate an appreciation of the Service's stewardship mission and would have the desire to apply the conservation ethic to their own lives and share it with others.

Rationale: The goal of interpretation and environmental education is to foster an understanding

and appreciation for natural processes that inspires people to behave in a more environmentally conscious manner. In addition to providing on-site recreation and education opportunities, the public use program would strive to inspire citizens to become better land stewards in their own communities and stronger advocates for the Refuge system. This objective is in keeping with the goals of the System that promote establishment of a greater appreciation of fish, wildlife and plants and their conservation.

Strategies:

2.5.1 – Develop survey questions that gauge visitors understanding and appreciation of natural resources, stewardship and environmentally sensitive ethics.

2.5.2 – Distribute the survey, on and off-site, every 5 years (twice during the life of the CCP). Distribute the survey over the course of a year to ensure that feedback is collected during all four seasons.

2.5.3 – Design simple, low cost methods of gathering change of behavior data (e.g., web, volunteers, environmental education students).

2.5.4 - Use survey data to guide interpretive and educational program development as well as public outreach.

Alternative C

By the end of the CCP, 50 percent of visitors would demonstrate an appreciation of the Service's stewardship mission and would have the desire to apply the conservation ethic to their own lives and share it with others.

Rationale: Given Alternative C's emphasis on restoration and conservation, it would be important for tour guides to communicate the Service's mission and ongoing efforts to protect and enhance habitat on the Refuge. Although Alternative C does not involve formal public use programming, Refuge staff would accompany all visitors during their guided tours. Tour guides would have opportunities to educate visitors about the Service's mission and promote the value of a stewardship ethic. This objective is in keeping with the goals of the System that promote the establishment of a greater appreciation of fish, wildlife and plants and their conservation.

Strategies: Same as B.

Alternative D

By the end of the CCP, 10 percent of visitors would express an understanding of the land stewardship mission of the Service and would express the desire to apply this conservation ethic to their own lives.

Rationale: This objective is in line with NWRS goals that promote the establishment of a greater appreciation of fish, wildlife and plants and their conservation. However, the increased number of visitors in Alternative D would hamper efforts to personally communicate with visitors and, as a consequence, a lower percentage of visitors are likely to adopt environmental ethics.

Strategies: Same as B.

Objective 2.6—Interpretative Planning

Alternative A

Within 1 year of the Refuge's establishment, develop a fact sheet on the Refuge's history and its natural and cultural resources. The fact sheet would be updated annually and would also outline ongoing scientific research.

Rationale: Because visitor use would be limited and highly controlled, the purpose of the fact sheet would be to provide staff with a basis for presenting information to visitors on guided tours. The content of the fact sheet would be broad and cover topics ranging from the Refuge's Cold War history to descriptions of habitats to ongoing scientific research. The fact sheet would also be used as a mailer to interested parties that request information on the Refuge.

Strategies:

2.6.1 – Use the fact sheet to develop guides for staff who are leading visitor tours.

Alternative B

Within 4 years of the Refuge's establishment, develop the interpretive component of a Visitor Services Plan outlining interpretive facilities and programs.

Rationale: An interpretive plan would be prepared as a component of an umbrella Visitor Services Plan. The interpretive plan would focus on creatively and accurately informing visitors and students about the new Refuge. The first step would be to communicate about the site's history and safe opportunities for access. During the early years of the Refuge's establishment, it also would be important to inform the public about the Refuge's wildlife, natural resources and scenic values and encourage people to visit the site. Gradually, the Service would need to develop and implement comprehensive interpretation programs that build an appreciation for the intricacies of the site's natural systems.

Strategies:

2.6.1 – Work with outside partners to develop the

interpretive component of the Visitor Services Plan. Potential partners include CDOW, surrounding city and county environmental education entities (government, non-profit and private), Cold War Museum, Boulder and Jefferson county high schools and the State Historic Preservation Office.

Alternative C

Within 1 year of the Refuge's establishment develop a fact sheet on the Refuge's habitat types, wildlife populations and the Service's restoration practices. The fact sheet would be updated annually and would also outline ongoing scientific research. Following year 3, Refuge staff would use the fact sheet as a basis for creating simple learning materials about the Refuge's natural resources that would be distributed to high school and college educators.

Rationale: The fact sheet is intended to provide staff with a basis for presenting information to visitors on guided tours and for developing simple learning materials that focus on the Refuge's ecology. Given Alternative C's emphasis on ecological restoration, the fact sheet would describe the Refuge's habitats, wildlife populations as well as the Service's management techniques for restoring and maintaining the grassland ecosystem. The fact sheet would also be used as a mailer to parties that request information on the Refuge.

Strategies:

2.6.1 – Same as A.

2.6.2 – Work with local educators to determine what resource learning materials would best supplement their curriculum.

Alternative D

Within 2 years of the Refuge's establishment, develop the interpretive component of a Visitor Services Plan outlining interpretive facilities and programs.

Rationale: Same as B, plus: The interpretive component of the Visitor Services Plan would be developed in the early CCP implementation stages because this alternative has a strong focus on providing a diversity of compatible public uses.

Strategies: Same as B.

Objective 2.7—Interpretative Programs

Alternative A

Not applicable to Alternative A.

Alternative B

Within 15 years of the Refuge's establishment, implement the interpretive component of the Visitor

Services Plan. Implementation would include the development of a wide range of interpretive programs and facilities.

Rationale: An interpretive plan would be prepared as a component of an umbrella Visitor Services Plan. The interpretive plan would be developed by Refuge staff and would describe interpretive as well as environmental education programs and related facilities. Initially, interpretation efforts would focus on providing information related to visitor comfort and safety. During later years of the CCP implementation, the focus would shift to the development of site-related interpretive programs and facilities. The range of programs and facilities would include guided tours about native flora and fauna, interpretive signage with both cultural and natural themes and overlook structures.

Strategies:

2.7.1 – Develop interpretive programs that explore the site’s natural and cultural resources and are accessible to children and adults.

2.7.2 – Distribute interpretive media (newsletter, flyers, website) in accordance with outreach techniques outlined in the Visitor Services Plan.

2.7.3 - Develop interpretive facilities including interpretive signage and interpretive displays.

Alternative C

Not applicable to Alternative C.

Alternative D

Within 15 years of the Refuge’s establishment, implement the interpretive component of the Visitor Services Plan. Implementation would include the development of a wide range of interpretive programs and facilities including a visitor center.

Rationale: Same as B.

Strategies:

2.7.1-2.7.2 – *Same as B.*

2.7.3 – Design and build (or retrofit) a visitor’s center and interpretive/orientation exhibits.

2.7.4 – Develop an interpretive naturalist program.

Objective 2.8—Environmental Education Planning

Alternative A

No educational programs in Alternative A.

Alternative B

Within 5 years of the Refuge’s establishment,

develop a plan outlining on- and off-site environmental education programs for high school and college-level students as well as training for educators. Environmental education programs would meet state standards for learning, accommodate independent studies and tie to the mission of the NWRS and the site’s natural resources and history.

Rationale: In the Denver Metropolitan area, natural resource study sites are needed to accommodate high school and college level research. This need was identified by educators and interpretive specialists at an environmental education focus group in the fall of 2002 and is based on the Refuge’s proximity to the Colorado School of Mines and University of Colorado.

Specialists noted that there are several environmental programs for elementary and middle school children in communities surrounding the Refuge, but programs that provide opportunities for high school students to develop research skills through field study are limited. Since high school and college students are more independent, the costs and staffing resources needed to develop these types of programs would be less than they would be for programs for younger students. Environmental education programs at the Refuge would be research oriented and would involve independent study and would therefore require only limited assistance and supervision from Refuge staff. The Service would, however, sponsor teacher workshops for local educators so they could effectively lead environmental education programs on the Refuge.

Given current public apprehension about the site’s safety, an independent and off-site approach to environmental education is appropriate during the first 5 years of the Refuge’s establishment. Although the educational program would focus on high school and college level students, limited on and off-site activities for visitors of all ages would also be included.

Strategies:

2.8.1 – Partner with area universities, high schools, the Cold War Museum and other educational institutions to develop the environmental education components of the Visitor Services Plan.

2.8.2 – Pursue environmental education grants in collaboration with area universities, high schools, the Cold War Museum and other educational institutions.

2.8.3 – Use website, email and other media to distribute information on refuge resources and data for student use.

Alternative C

No educational programs in Alternative C.

Alternative D

Within 3 years of the Refuge's establishment, develop a plan outlining environmental education programs for on- and off-site programs for kindergarten (K)-eighth graders, high school and college level students, as well as training for educators. Environmental education programs would meet state standards for learning and accommodate independent studies and would be tied to the mission of the NWRS and the site's natural resources and history.

Rationale: Same as B, plus programs for younger students (K-eighth) also would be provided and would distinguish themselves from other youth programs by focusing on the prairie ecosystem. The environmental education programs would include both teacher-led and staff-led programs as well as independent research.

Outdoor classrooms and educational signage would enhance the educational programs.

Strategies: Same as Alternative B.

Objective 2.9—Environmental Education Implementation

Alternative A

No educational programs in Alternative A.

Alternative B

Within 8 years of the Refuge's establishment implement the environmental education components of the Visitor Services Plan and the program it outlines for high school and college level students.

Rationale: Once the Refuge becomes established and the public becomes more comfortable with site visitation through public education and outreach efforts, the Refuge staff would begin implementing the plan. Education programs would adopt the state's model content curriculum standards and focus on the Refuge's natural resources. Implementation of the program would include teacher workshops in which Service staff train local educators about the Refuge's resources. Educators would be required to attend a Service-sponsored workshop prior to leading environmental education programs on the Refuge.

Strategies:

2.9.1 – Work with area universities, high schools, the Cold War Museum and other educational institutions to implement environmental education programs.

2.9.2 – Collaborate with area universities, high schools, the Cold War Museum and other educational institutions and pursue grants to support environmental education programs.

2.9.3 – Use a variety of media to distribute a wide range of data that can be used by high school and college students.

2.9.4 - Sponsor teacher workshops in order to inform educators about the Refuge's resources and facilitate teacher-led environmental education programs.

Alternative C

No educational programs in Alternative C.

Alternative D

By year 15, implement the environmental education components of the Visitor Services Plan and the program it outlines for K-8th, high school and college level students.

Rationale: Same as B.

Strategies:

2.9.1-2.9.4 – Same as B.

2.9.5 – Construct educational facilities including an outdoor classroom.

2.9.6 – Use a variety of tools to provide educational opportunities, including an interactive website that provides students with current Refuge data on Refuge happenings.

Objective 2.10 – Hunting Program

Alternative A

No hunting programs in Alternative A.

Alternative B

Within the first 2 years of the Refuge's establishment, institute a controlled youth and/or disabled person's deer and/or elk hunting program 2 weekends a year. After 2 years, annually modify the extent of the hunting program (number of permits and frequency) in order to ensure that target level ungulate populations are maintained. If appropriate for wildlife management, expand the hunting program to include able-bodied hunters.

Rationale: Hunting is consistent with the Refuge System's mission and is identified as a priority wildlife dependent use on refuges (outlined in the Improvement Act). Hunting allowed on the Refuge would be subject to state regulations and safety requirements. Hunting would be highly controlled in terms of number of users, user populations, time

frame and allowable weapons. Hunting would be limited to short-range weapons such as archery and shotguns and only open during designated weekends to youth and disabled hunters. There are very few hunting opportunities for these special populations in the region and they would benefit from the tightly managed program at the Refuge.

There have been concerns expressed from the public about the consumption of deer at Rocky Flats if a public hunting program is implemented. Tissue samples, including meat tissues, of deer harvested at Rocky Flats in 2002 have been analyzed for contaminants. The results of the analysis indicate that there is no significant uptake of contaminants by deer or other wildlife species at Rocky Flats. Risk-based calculations based on these measurements indicate very low health risks (less than 1×10^{-6} increased cancer risk).

Hunting would also be an important management tool for maintaining target ungulate populations and optimal habitat conditions. If the Service, in consultation with CDOW determines that a larger hunting program is needed to control ungulate populations, the program would be opened to the general public and not limited to youth and disabled hunters. A step-down hunting plan would be prepared as a component of an umbrella Visitor Services Plan.

Strategies:

2.10.1 – By year 1, develop a hunting plan with public involvement.

2.10.2 – Work with the CDOW and other interested entities to develop and implement the hunting plan.

2.10.3 – During the hunting weekends, close the Refuge to other public use.

2.10.4 – Allow hunters with proof of completion of a certified hunter safety course to hunt using archery and shotguns.

Alternative C

No hunting programs in Alternative C.

Alternative D

Same as B.

Objective 2.11—Hunting Program Assessment

Alternative A

No hunting programs in Alternative A.

Alternative B

Following each hunting season, assess the success of the hunting program and adjust hunting opportunities as appropriate.

Rationale: Refuge management would need to monitor and evaluate the newly instituted hunting program and adjust the program based on ungulate population sizes, safety, adjacent communities support and hunter satisfaction (one survey would be developed to address objectives 2.11 and 2.12).

Strategies:

2.11.1 – Develop a survey for hunters, adjacent landowners and surrounding communities to measure their interest and support for the hunting program.

2.11.2 – Monitor deer populations and habitat conditions to understand the effects of the hunting program on wildlife and Refuge resources.

Alternative C

No hunting programs in Alternative C.

Alternative D

Same as B.

Rationale: Same as B.

Strategies: Same as B.

Objective 2.12—Hunting Program Benchmarks

Alternative A

No hunting programs in Alternative A.

Alternative B

About 95 percent of hunters would report no conflicts with other users, a reasonable harvest opportunity and overall satisfaction with their Refuge experience.

Rationale: Due to the limited number of hunters and the healthy resident deer population at the Refuge, it is likely that youth and disabled individuals would be afforded a quality hunting experience.

Strategies:

2.12.1 – Develop a brief survey for hunters in order to evaluate their Refuge experience (combined with survey used to measure objective 2.11).

2.12.2 – Staff interaction on a one-on-one with hunters.

Alternative C

No hunting programs in Alternative C.

Alternative D

Same as B.

Rationale: Same as B.

Strategies: Same as B.

Objective 2.13—Recreation Facilities

Alternative A

Within 1 year of Refuge establishment, provide a portable restroom facility to accommodate visitors on guided tours.

Rationale: No facility development, other than a restroom, would be required because visitation would be very limited.

Strategies:

2.13.1 – Install a portable restroom facility.

Alternative B

Within 1 year of the Refuge’s establishment, begin development of the hiking trail to the Lindsay Ranch and build an un-staffed welcome kiosk and simple

restroom facilities at the open access point. By year 5, additional trails would be open to public use. By year 7, 75 percent of all recreation facilities including trails, and interpretive signage at key locations would be established. Parking (4 parking areas ranging in size from 3 to 30 spaces with the largest parking area at the main entrance accommodating horse trailers) would also be developed during this period. By year 15, develop 100 percent of the trail system, including connections to adjacent areas for pedestrians, cyclists and equestrians.

Rationale: Recreational facilities would provide public access to the Refuge’s many natural and cultural resources. During the early years of the CCP implementation, the Service would focus staffing and budgetary resources on habitat restoration including revegetating unnecessary roads, weed management, and restoring stream crossings. This focus would allow the Service to reduce the severity of noxious weed infestations and gain a foothold on road restoration before public trail use introduces new disturbances onto the landscape. The Service would also need to conduct baseline Preble’s surveys before opening the site to public use. Therefore, with the exception of the immediate opening of the Lindsay Ranch hiking trail and welcome kiosk, development of the recreation facilities would need to be postponed until year 5. The un-staffed welcome kiosk positioned nearby the Lindsay Ranch trailhead would inform visitors about current access opportunities and future public use facility development.

If early restoration efforts are effective and budgetary and staffing resources are available, the Service may initiate construction of new trails and the conversion of selected roads to trails before year 5 and, if feasible, may open some trails or portions of trails ahead of schedule.

Bicycles and horses would be permitted on multiple use trails in order to facilitate regional trail linkages and to serve as a mode of transportation for wildlife viewing and accessing the Refuge from surrounding communities. Certain trails would be designated for pedestrian use only. Trails would be designed to provide connections, use existing road corridors and minimize impacts to sensitive wildlife resources.

The unstaffed welcome kiosk would serve as a central information dissemination point at the main entrance to the Refuge. The simple structure would include orientation and interpretive panels to explain Refuge

© USFWS



Viewing blinds and overlooks would facilitate wildlife observation and photography.

© USFWS



The Service would continue to partner with CDOW.

resources and public use opportunities. Eventually, the structure would be augmented with a seasonally staffed visitor contact station that would include permanent displays, administrative offices, Refuge orientation information and educational materials.

Strategies:

2.13.1 – Construct an unstaffed welcome kiosk and portable restroom facilities within disturbed areas at the main parking lot and trailhead.

2.13.2 – Develop a universally accessible trail that links the main parking area to the Rock Creek overlook. Also provide an accessible mounting ramp for equestrian use.

2.13.3 – To provide a quality trail user experience, reduce reclaimed road widths to single lane, unpaved trails. However, maintain adequate width of trail corridors to allow them to also serve as access routes for maintenance or fire protection vehicles.

2.13.4 – Clearly mark all trails with signage indicating permitted uses.

2.13.5 - Prior to opening the Lindsay Ranch trail improve the trail corridor and conduct a Preble's survey.

2.13.6 – Where appropriate, use existing road corridors for trails to reduce negative impacts on site resources and site trails so they minimally impact habitat and provide a quality visitor experience.

2.13.7 – Realign road/trail corridors in specific areas with excessive slopes and/or sensitive wildlife habitat, or where wildlife viewing could be greatly enhanced.

2.13.8 – Designate some sections of the trail for

pedestrian use only and create multi-use trails that permit bicycles and horses (equestrian use would be limited to the southern half of the Refuge).

2.13.9 – Implement seasonal trail closures as needed to protect wildlife and their habitats.

2.13.10 – Use existing roads to provide motorized access to parking and trailheads. Make all motorized access and parking areas unpaved.

2.13.11 – Work with adjacent landowners on issues related to trail linkages to trail systems north, south, east and west of the Refuge.

2.13.12 – Work with neighboring landowners, agencies and the Colorado Department of Transportation (CDOT) to develop safe pedestrian crossings at all trailheads.

2.13.13 – Work with others to develop an underpass under Indiana Street if it is deemed necessary for safe pedestrian connections to trails and open space east of the Refuge.

2.13.14 - Post signage at all trailheads that clearly communicates access opportunities as well as information about the site's history, recent clean up efforts, and differences in management between the Refuge and neighboring open space properties.

2.13.15 - Educate equestrian users on the importance of using weed-free hay and removing manure from trails.

2.13.16 - Work with equestrian groups and ensure that they remove horse manure from trails on a volunteer basis.

Alternative C

Within 7 years of the Refuge's establishment, develop all recreational facilities. Facilities would include a short (approximately 1.25 miles) access road, limited parking with turn around space (approximately 10 spaces, which can also be used by a small bus), a pedestrian trail with an overlook, portable toilets and information/ interpretive panels.

Rationale: Limited recreation facilities would be provided to visitors to minimize site disturbance and provide visual access to the Rock Creek drainage. As one of the least disturbed and most diverse portions of the Refuge, Rock Creek is a desirable destination. All facilities would be sited in previously disturbed areas. Facility development would not be completed until year 7 because management resources would be directed toward conservation and restoration efforts during the early years of the CCP.

Strategies:

2.13.1 – Provide portable toilets for both staff and visitor use.

2.13.2 – Design and construct the unpaved access, circulation and parking and trail facilities.

2.13.3 – Reclaim disturbed areas within these corridors by removing paving and reducing 2-track roads to single track trails.

2.13.4 – Place an interpretative panel at the Rock Creek overlook. Post added trail signage to explain limited access opportunities.

Alternative D

Within the first 5 years of the Refuge's establishment, develop 100 percent of the trail system along with simple orientation and interpretive signage at key locations. The trail network would provide pedestrians, cyclists and equestrian users opportunities to access the site's key resource areas and to connect to adjacent trails and communities. During this period, develop an unstaffed welcome kiosk and simple restroom, access and parking facilities (five parking areas ranging in size from 10 to 30 spaces, designed to accommodate horse trailers).

Rationale: Same as Alternative B, except parking areas in this alternative would be larger than in B to accept a greater diversity of users. In Alternative D, the simple welcome kiosk would be supplemented with a staffed visitor center that would include permanent displays, administrative offices, Refuge orientation information and educational materials.

Strategies: Same as B.

Objective 2.14—Enhanced Recreation Facilities

Alternative A

Not applicable to Alternative A.

Alternative B

Within 10 years of the Refuge's establishment, enhance trails, construct a seasonally staffed contact station with upgraded restrooms, develop maintenance facilities and create additional interpretive panels.

Rationale: To bolster the quality of the visitor experience, additional resources would be expended on visitor use facilities in the later years of the CCP. A seasonally staffed contact station would be located in an existing disturbed area where it would not fragment wildlife habitat. The facility would allow for more visitor contact and provide a central location for information dissemination and interpretation.

Trail-related improvements would include upgrading trail surfaces, overlooks and interpretive signage. These improvements would reduce maintenance costs, enhance the quality of the visitor experience and reduce resource damage. Viewing blinds could be constructed to enhance photographic and wildlife observation opportunities.

Strategies:

2.14.1 – Build additional interpretive signs.

2.14.2 – Improve trail alignments, surfaces and overlooks to minimize resource impacts and improve the visitor experience.

2.14.3 – Routinely evaluate trail and public facility impacts and establish measures to minimize impacts on wildlife from trails and other visitor facilities and uses.

2.14.4 – Build a viewing blind to enhance wildlife observation opportunities.

2.14.5 – Construct a small (approximately 750 to 1,000 square feet), seasonally staffed contact station.

2.14.6 - If trail conflicts arise, use signage and expanded trail corridors on sections of trail where site lines are limited to divide equestrians from other trail users.

2.14.7 - If funding is available, position benches at strategic locations along certain trails and construct a limited number of shade structures.

Alternative C

Not applicable to Alternative C.

Alternative D

By the end of the CCP, enhance trails, construct a visitor center with upgraded restrooms and build additional photography and wildlife observation facilities.

Rationale: Same as Alternative B plus; a staffed visitor center would be located in an existing disturbed area where it would not fragment wildlife habitat. The facility would allow for more visitor contact and provide a central location for information dissemination and interpretation.

Strategies:

2.14.1-2.14.3 – Same as B.

2.14.4 – Construct additional wildlife observation and photography facilities called for in the interpretation component of the Visitor Services Plan.

2.14.5 – Develop a visitor center.

2.14.6 - 2.14.7 - *Same as B*

2.14.8 – Develop an outdoor classroom outlined in the interpretive component of the Visitor Services Plan.

Objective 2.15— Cold War Museum

Alternative A

Not applicable to Alternative A.

Alternative B

If the Cold War Museum secures a site adjacent to the Refuge and funds to develop a museum within the life of the plan, the Service would partner to co-locate interpretive and other public use facilities with the organization.

Rationale: The Refuge Act (P.L. 107-107,sec.3181) (Refuge Act - Appendix A) states that the Secretary may establish a Rocky Flats Museum to commemorate the contribution that Rocky Flats and its work force provided to winning the Cold War. The legislation states that the museum shall be located in the City of Arvada unless the Secretary determines otherwise. Therefore, there is a possibility that the facility would be constructed on land adjacent to the Refuge should it become available and be deemed appropriate.

Partnering with the Cold War Museum on the development of a museum presents an excellent opportunity for the Service to reduce the footprint of public use facilities on the Refuge. The shared facility would house the simple interpretive displays and staff office space originally intended for the contact station. The Cold War Museum would also be staffed seasonally by Refuge staff and serve as a meeting area for guided tours and other Refuge programs. Additionally, the Cold War Museum facility would present increased opportunities to interpret the the history of the site as rangeland and a nuclear weapons production facility.

Strategies:

2.15.1 - Continue working with the Cold War Museum to explore potential museum sites adjacent to the Refuge.

Alternative C

Not applicable to Alternative C.

Alternative D

Same as B.

Rationale: *Same as Alternative B, plus;* The Cold War Museum, if located adjacent to the Refuge, would substitute for the visitor center. The shared facility

would house the interpretive displays and staff office space originally intended for the visitor center.

Strategies: Same as B

GOAL 3. SAFETY

Conduct operations and manage public access in accordance with the final Rocky Flats' cleanup decision documents to ensure the safety of the Refuge visitors, staff and neighbors.

© Shapins Associates



Volunteers would help with restoration activities such as seed collection.

Objective 3.1—Staff Safety

Alternative A

Throughout the life of the CCP, all Service staff working at the Refuge would participate in a Refuge orientation and training that would introduce them to the site itself, the institutional controls, CERCLA remedy requirements, safety procedures (both workers and public), biological hazards and physical hazards. The orientation and training would be required prior to beginning an assignment.

Rationale: Rocky Flats National Wildlife Refuge is a CERCLA site that has undergone cleanup. Specific areas will remain under primary jurisdiction of the DOE and may remain off limits to the public. It would be important that Refuge staff receive specific training regarding the site background, remediation actions, CERCLA remedy requirements and institutional controls. This training would help ensure the safety of employees and visitors. Knowledgeable employees would be instrumental in ensuring that visitors are kept informed and feel safe during their visit to the Refuge.

Strategies:

- 3.1.1 – Develop an orientation training program that clearly addresses key Refuge safety issues.
- 3.1.2 – Provide first aid training to key staff who may be required to assist the public and staff on site should an accident occur.
- 3.1.3 – Develop a record keeping system to document worker training.
- 3.1.4 – As appropriate, develop site-specific appendixes to the Refuge Complex Safety Plan.
- 3.1.5 – Develop a health and safety plan, within a year of plan approval, to cover all Refuge operations.
- 3.1.6 – Implement a goal of zero incident performance.

Alternative B

Same as A.

Rationale: Same as A.

Strategies: Same as A.

Alternative C

Same as A.

Rationale: Same as A.

Strategies: Same as A.

Alternative D

Same as A.

Rationale: Same as A.

Strategies: Same as A.

Objective 3.2—Visitor Safety

Alternative A

Throughout the life of the CCP, 100 percent of the visitors on the guided programs would be briefed on the site's history. All Refuge employees would be responsible for ensuring that safety regulations and other compliance policies are met.

Rationale: The Rocky Flats site has been closed to the general public for over 50 years; therefore, it would be important for the Service to clearly report the site's history. The Service, when possible, would work with the DOE to ensure that visitors understand access restrictions.

Strategies:

- 3.2.1 – Ensure that every guided program addresses the site's history.

- 3.2.2 – Include safety-related questions in the visitor survey. Surveys would be used to determine the safety knowledge of the visitors and understand how to adjust the safety awareness program based on this information.

Alternative B

Within 5 years of Refuge establishment 75 percent of visitors would be aware that the Refuge is safe and open for public access before they arrive. Upon arrival, these visitors would be informed of public use opportunities and restrictions.

Rationale: Both the EPA and the CDPHE have concurred that the Refuge would be safe for public access (Appendix D). However, given the Rocky Flats site's nuclear weapons production history, it would be important for the Service to clearly inform the public that it is safe to visit the Refuge and that the site offers opportunities to experience unique grassland habitat and many wildlife dependent recreation programs and facilities. In addition to promoting opportunities for accessing the Refuge, the Service would communicate to visitors about the site's history and areas on-site where public access is prohibited. Areas retained by DOE would most likely be closed to public access and access to sensitive habitats would be restricted at times. Similarly, the dilapidated structures within the Lindsay Ranch complex may be fenced off if they pose a safety hazard.

Outreach materials, signage and staff would educate the public about the steps to becoming a refuge, access restrictions and opportunities. DOE would post signage and construct fencing or another means of boundary demarcation to clearly identify all restricted areas that are subject to institutional controls. The Service would continue to work with DOE to ensure that the boundary is clearly visible to the public.

Strategies:

- 3.2.1-3.2.2 – *Same as A.*

- 3.2.3 – Provide maps and interpretive signs at all trailheads that inform visitors about the site's history, clean up, and access restrictions.

- 3.2.4 – Help potential users understand the site's restrictions and public use opportunities through a diversity of media including TV and radio programs, brochures, personal talks, website, public service announcements, news releases and articles. Also work with local school systems to educate teachers and

students about the Refuge's recreational and educational potential.

3.2.5 – Provide Refuge access information to regional map and tour book publishers.

3.2.6 – Develop surveys that are implemented at Refuge access points to determine the safety knowledge of the visitors and understand how to adjust the awareness program based on this information. Data collection would be consolidated into one public use survey encompassing survey needs identified in other goals.

3.2.7 – Maintain a law enforcement presence on-site and ensure that Refuge employees are well informed and can educate visitors on Refuge safety restrictions and allowable uses.

3.2.8 – Document violations and measure the success of the program by the reduction in violations.

3.2.9 – Close the Refuge to public use prior to and during the use of prescribed fire on the Refuge.

3.2.10 - Work with DOE to clearly demarcate the DOE retained land boundary with a barbed-wire agricultural fence, permanent obelisks, signage or other appropriate means.

3.2.11 - Address the site's history in guided programs.

Alternative C

Same as A.

Rationale: Same as A.

Strategies:

3.2.1-3.2.2 – *Same as A.*

Alternative D

Same as B.

Rationale: Same as B.

Strategies:

3.2.1-3.2.2 – *Same as A.*

3.2.2-3.2.11 – *Same as B.*

GOAL 4. EFFECTIVE AND OPEN COMMUNICATION

Conduct communication outreach efforts to raise public awareness about the Refuge programs, management decisions and the mission of the U.S Fish & Wildlife Service and the National Wildlife Refuge System among visitors, students and nearby residents.

Objective 4.1—Outreach

Alternative A

Throughout the life of the CCP, disseminate information collected on the Refuge through a fact sheet sent to interested parties upon request.

Rationale: Historically, Rocky Flats has been a controversial site with substantial public interest and concern. The Service would respond to inquiries and educate the public about the site's transformation from a nuclear weapons production facility to a National Wildlife Refuge. In order to achieve the Refuge's purposes, vision and goals, the Service would need to communicate with the public.

Strategies:

4.1.1 – Distribute the fact sheet developed in Objective 2.6 to individuals, communities, civic and educational organizations, conservation groups and other interested stakeholders upon request.

Alternative B

Within 5 years of the Refuge's establishment, develop and implement four outreach methods to inform the public about environmental stewardship, safety issues, CCP implementation and educate them on the missions of the Service and NWRS. Once established in year 1, outreach efforts would be ongoing throughout the life of the CCP.

Rationale: Same as Alternative A, plus the Service would work with stakeholders, interest groups and the general public to inform them about the site's resources and the visitor programs and facilities. In order to achieve the Refuge's purposes, vision and goals, the Service would need to maintain open and regular communication with the public.

Strategies:

4.1.1 – At a minimum conduct outreach opportunities in Broomfield, Boulder, Arvada and Westminster and recruit participation from the local municipal governments, business communities, civic and educational organizations, conservation groups, recreational users and other interested stakeholders.

4.1.2 – Establish a monitoring system to measure the diversity of groups in attendance at outreach events.

4.1.3 – Use a variety of outreach communication methods such as a newsletter, website, news releases, local newspaper column and TV and radio programs.

4.1.4 – Encourage Refuge staff to attend selected government and organization meetings and participate with DOE in communicating with the public about long-term stewardship programs.

Alternative C

Same as B.

Rationale: Same as B.

Strategies: Same as B.

Alternative D

Same as B.

Rationale: Same as B.

Strategies: Same as B.

GOAL 5. WORKING WITH OTHERS

Foster beneficial partnerships with individuals, government agencies and non-governmental organizations and others that promote resource conservation, compatible wildlife-related research, public use, site history and infrastructure.

Objective 5.1—Emergency

Alternative A

Within 1 year of the Refuge's establishment, emergency response agreements would be in place with all adjacent fire districts for mutual aid in responding to fire and other emergencies. Additional emergency response and fire protection agreements would be developed with state and local law enforcement agencies as needed.

Rationale: The Refuge is small and in close proximity to a number of communities. Given the Refuge's location and the other on-site safety issues, rapid suppression of fire or response to other emergencies would be essential.

Strategies:

5.1.1 – Meet annually, or as often as needed, with partnering agencies including DOE, to coordinate fire and emergency response plans.

5.1.2 – Coordinate all prescribed fires with all nearby fire districts and other cooperating agencies.

Alternative B

Same as A.

Rationale: Same as A.

Strategies: Same as A.

Alternative C

Same as A.

Rationale: Same as A.

Strategies: Same as A.

Alternative D

Same as A.

Rationale: Same as A.

Strategies: Same as A.

Objective 5.2—Conservation

Alternative A

Within 1 year of the Refuge's establishment, develop an agreement with the CDOW to coordinate habitat and wildlife management strategies related to habitat and resource conservation. Maintain open dialogue with adjacent landowners and local governments.

Rationale: The Service would establish a partnership with CDOW and afford the agency opportunities to supplement the Service's limited habitat and wildlife conservation programs. The Service would cooperate with CDOW on potential species reintroductions. The Service would remain open to partnering with adjacent landowners and local governments if opportunities arise to conserve additional habitat.

Strategies:

5.2.1 – Seek CDOW's input on devising and implementing wildlife management strategies and conservation objectives.

5.2.2 – Work closely with surrounding landowners, open space and natural resource entities such as Jefferson County, City of Boulder, Boulder County, City and County of Broomfield, City of Westminster, Town of Superior and City of Arvada to develop resource management approaches for issues that cross Refuge boundaries.

Alternative B

Throughout the life of the CCP, Refuge staff would meet annually (at a minimum) with local governments and other adjacent landowners, to coordinate habitat management and resource conservation strategies.

Rationale: The Service would encourage a regional management approach for the conservation and restoration of natural resources, which would require collaboration with surrounding landowners. Many natural resource management issues such as invasive weed control, wildlife corridors, recovery of declining species and impacts to resources caused by visitors would need to be coordinated across boundaries.

Strategies:

5.2.1 – Work closely with surrounding open space and

natural resource entities such as Jefferson County, City of Boulder, Boulder County, City and County of Broomfield, City of Westminster, Town of Superior, City of Arvada and CDOW to develop resource management approaches for issues that cross Refuge boundaries.

5.2.2 – Use volunteers to help with conservation and restoration activities.

5.2.3 – Work with adjacent landowners to maintain corridors for ungulate populations and other wildlife that migrate seasonally to and from the Refuge.

Alternative C

Same as B.

Rationale: Same as B.

Strategies: Same as B.

Alternative D

Same as B.

Rationale: Same as B.

Strategies: Same as B.

Objective 5.3—Research

Alternative A

Throughout the life of the CCP, maintain agreements with universities and federal agencies for compatible scientific research.

Rationale: The Service would encourage ongoing compatible research efforts to continue after closure and transfer. Due to limited resources allocated to partnerships and research, in particular, the Service would rely on outside researchers from other agencies and universities to broaden its data base. Research having direct implications for Refuge management, such as information gathering and analysis focused on wildlife, habitat and public use would considerably help the Refuge and surrounding entities.

Strategies:

5.3.1 – Establish criteria to evaluate research proposals. Each proposal would be subject to a compatibility determination.

5.3.2 – Emphasize and support research focusing on studies that directly affect Refuge management.

Alternative B

Within the first 5 years of the Refuge's establishment, develop a list of research needs to be addressed by

Refuge staff and external researchers and establish a system to evaluate and approve proposals for compatible scientific research that focuses on the Refuge's habitat, wildlife and public use.

Rationale: Because the Refuge would be a newly established refuge with limited resources, it would be important for Service staff to collaborate with outside researchers. Research partnerships would allow the Service to expand its baseline data and study management techniques more efficiently. Research that has direct implications for Refuge management, such as information gathering and analysis focused on wildlife, habitat and public use would be instrumental in shaping the management direction of the Refuge and similar prairie landscapes throughout the life of the CCP and into the future.

Strategies

5.3.1 – Establish criteria to evaluate research proposals that would ensure research is compatible with the Refuge mission, purpose and goals.

5.3.2 – *Same as A.*

5.3.3 – Partner with others to seek funding to address identified research needs.

Alternative C

Within the first 5 years of the Refuge's establishment, develop a list of research needs to be addressed by Refuge staff and external researchers and establish a system to evaluate and approve proposals for compatible scientific research that focuses on long-term habitat changes and species of concern.

Rationale: Same as B except: Research would not address public use, but focus on habitat and wildlife.

Strategies: Same as B.

Alternative D

Same as B.

Rationale: Same as B.

Strategies: Same as B.

Objective 5.4—Volunteer

Alternative A

No volunteer program in Alternative A.

Alternative B

Within 3 years of the Refuge's establishment, create a volunteer program and support the establishment of a Friends group for the Rocky Flats National

Wildlife Refuge.

Rationale: Volunteers are essential for the growth and success of many refuges within the NWRS. Volunteers can assist with both resource conservation activities and visitor use programs. Support of a Friends groups would play an important role in leveraging local private resources and public support for Refuge programs.

Strategies

5.4.1 – Recruit volunteers from equestrian and bicycle groups and others to help maintain trails.

5.4.2 – Develop and implement a volunteer program that defines volunteer opportunities for participation in wildlife habitat and public use programs.

5.4.3 – Work with interested individuals to establish and maintain a nonprofit corporation who's objective is to positively support the Refuge.

Alternative C

No volunteer program in Alternative C.

Alternative D

Same as B.

Rationale: Same as B.

Strategies: Same as B.

GOAL 6. REFUGE OPERATIONS

Based on available funds, provide facilities and staff to fulfill the Refuge vision and purpose.

Objective 6.1—Staffing**Alternative A**

Within 2 years of the Refuge's establishment, obtain base funding for one full-time employee (1.0 FTE) and one seasonal (0.5 FTE) at the Refuge and assign collateral duties for Rocky Mountain Arsenal NWR staff. Fire management funding would be used for an additional two full-time (2.0 FTE) and two seasonal (1.0 FTE) employees.

Rationale: Given restrictions on general public use and the limited amount of habitat and wildlife conservation programs, minimal on-site staff would be required. Due to the use of prescribed fire within the Rock Creek Reserve and the high probability and frequency of wildfires in the grasslands of the Refuge, fire personnel are included in the staffing. Refuge fire staff (3.0 FTE) would be responsible for suppressing wildfires, developing prescribed burn plans, overseeing prescribed fires and developing and maintaining

mutual aid agreements. Service employees would be available to lead a limited number of Refuge tours.

Strategies:

6.1.1 – Follow Service protocols for budget development and hiring of staff.

Alternative B

Within 2 years of the Refuge's establishment, obtain base funding for three employees (3.0 FTE) for the Refuge and within 5 years, add one employee (1.0 FTE). Also assign collateral duties for Rocky Mountain Arsenal NWR staff. Fire management funding would be used for an additional two full-time (2.0 FTE) and two seasonal (1.0 FTE) employees.

Rationale: Due to the site's urban context, high public interest and extensive restoration requirements, on-site staffing and facilities would be necessary from the onset of the CCP's implementation. Staffing needs would be based on the current and projected NWRS's budgetary environment and the objectives of the CCP. Three full-time employees (3.0 FTE) would be required within 2 years of Refuge establishment to begin instituting habitat and restoration management practices. An increase in public use after year 5 would require one additional employee (1.0 FTE).

Due to the use of prescribed fire in this alternative and the high probability and frequency of wildfires in the grasslands of the Refuge, fire personnel are included in the staffing. Refuge fire staff (3.0 FTE) would be responsible for suppressing wildfires, developing prescribed burn plans, overseeing prescribed fires and developing and maintaining mutual aid agreements. Because the Refuge would be managed as part of a complex, in conjunction with Two Ponds NWR and the RMA, some staffing resources would be shared between the three refuges. Collateral duties for Two Ponds and RMA staff at the Refuge would ensure that the new Refuge benefits from the experience and expertise of trained staff.

Strategies: Same as A.

Alternative C

Within 2 years of the Refuge's establishment, obtain base funding for five employees (5.0 FTE) for the Refuge and assign collateral duties for Rocky Mountain Arsenal NWR staff. Fire management funding would be used for an additional two full-time (2.0 FTE) and two seasonal (1.0 FTE) employees.

Rationale: The extensive site restoration, research, monitoring and habitat management to be initiated upon Refuge establishment would require five

employees (5.0 FTE). Staffing needs would be based on the current and projected NWRS's budgetary environment and the objectives of the CCP.

Staffing for suppressing both prescribed fire and unplanned grassland fires has the same rationale as Alternative B, as does the sharing of staff resources between Two Ponds NWR and the RMA.

Strategies: Same as A.

Alternative D

Within 2 years of the Refuge's establishment, obtain base funding for six employees (6.0 FTE) for the Refuge and within 5 years add two additional employees (2.0 FTE). Also assign collateral duties for Rocky Mountain Arsenal NWR staff. Fire management funding would be used for an additional two full-time staff (2.0 FTE) and one seasonal employee (0.5 FTE).

Rationale: Due to the site's urban context, high public interest and attractive recreational resources, on-site staffing and facilities would be necessary during the early stages of plan implementation. Staffing needs would be based on the current and projected NWRS's budgetary environment and the objectives of the CCP. Six employees (6.0 FTE) would be required within 2

years of Refuge establishment to fulfill the diverse habitat, wildlife and increased public use responsibilities outlined in Alternative D. Two more employees (2.0 FTE) would be needed by year 5, upon implementing additional public use programs. Dedicated visitor services staff would be included among the Refuge staff.

Staffing for suppressing unplanned grassland fires has the same rationale as Alternative B, as does the sharing of staff resources between Two Ponds NWR and the RMA. However, one-half less FTE is needed because prescribed fire is not included in this alternative.

Strategies: Same as A.

Objective 6.2—Operations and Management Facilities

Alternative A

Operations and maintenance (O&M) facilities at RMA would support all maintenance, conservation and administrative activities at the Refuge.

Rationale: Primary maintenance facilities and equipment storage for the Refuge would be at the RMA and no facility development would take place at the Refuge. Refuge O&M funding may be required to



Prescribed burning would occur in designated areas outside of DOE-retained lands in Alternatives A, B, and C.

support conservation and restoration projects in the Rock Creek Reserve, however, projects would not necessitate the support of onsite O&M facilities.

Strategies:

6.2.1 – Prepare and submit projects for the Refuge Operations Needs System and Maintenance Management System database.

6.2.2 – Prepare a fire cache and install necessary water storage systems (e.g., tanks).

6.2.3 – Coordinate equipment use with RMA staff.

6.2.4 – Install boundary and trailhead signs along the Refuge boundary in order to identify access points and ownership.

6.2.5 – Renovate existing, on-site vehicle search buildings to create a small office space and to use for storage and other refuge operations.

Alternative B

Within 5 years of the Refuge's establishment, develop 50 percent of administrative and visitor use facilities for on-site presence and connectivity with regional trail systems. Within 5 years of the Refuge's establishment, develop 50 percent of O&M facilities needed to support public use and conservation objectives. By year 10, complete all O&M facilities.

Rationale: During the early years of CCP implementation, management resources would be focused on public outreach and education beyond the site boundaries, developing partnerships and securing funding. Habitat conservation and restoration would be the primary management priority. Construction of the trail system, signage and orientation and interpretation facilities would follow the development of restoration measures.

During the first 5 years of the Refuge's establishment, the Service staff would rely on O&M facilities at RMA. Due to public outreach events and word of mouth, visitor numbers are likely to substantially increase once the Refuge is fully open to the general public in the fifth year of the Refuge's establishment, therefore, it would be important to establish on site staffing and complete visitor facilities by year 10. Once visitor use facilities are established, on-site maintenance facilities would be constructed and interpretive signage and trails would be upgraded. Throughout the life of the CCP, RMA O&M facilities and staff would supplement Refuge operations. The Service will not use the land at Rocky Flats for residential or "bunkhouse" facilities during the life of the CCP.

Strategies:

6.2.1- 6.2.5 – *Same as A.*

6.2.6 – Provide administrative offices for Refuge employees within the contact station.

6.2.7 – Pursue partnerships and funding sources including but not limited to challenge cost share projects, Federal Highway Administration, CDOT and other transportation entities, Great Outdoors Colorado, CDOW, Mile High Youth Corps, Colorado Historical Society and Volunteers for Outdoor Colorado.

6.2.8 – Where possible, screen maintenance facilities from visitor use areas.

6.2.9 – Construct a small (1,750 to 2,250 square feet) maintenance/storage facility.

6.2.10 - Install a cistern or other storage system to provide water to the visitor contact station, offices, and maintenance facilities.

6.2.11 - Co-locate O&M facilities with public use facilities and construct facilities in areas that are already disturbed or degraded and will not impact important wildlife habitat.

Alternative C

Within 3 years of the Refuge's establishment, develop a satellite maintenance facility to support Refuge operations.

Rationale: Given the emphasis on ecological restoration in Alternative C, the construction of O&M facilities would precede the development of public use facilities. Primary maintenance facilities and equipment storage for the Refuge would be at the RMA with only a small facility at the Refuge. Limited facility development at the Refuge would reduce O&M expenses and ensure that the maximum amount of land is conserved. The construction of the maintenance facilities within the early years of the Refuge's establishment would also help the Service establish an on-site presence.

Strategies: *Same as B.*

Alternative D

Within 4 years of the Refuge's establishment, develop 75 percent of the administrative and visitor use facilities for on-site presence and connectivity with regional trail systems. Within 5 years of the Refuge's establishment, develop 50 percent of O&M facilities needed to support public use and conservation objectives. By year 10, complete all O&M facilities. By year 15, complete construction of the visitor center.

Rationale: Given the emphasis on public use in Alternative D, development of administrative and visitor use facilities would be accelerated and all trails and preliminary visitor use facilities (e.g., welcome kiosk, restrooms) would be developed early in the life of the CCP. Extensive public outreach events and word of mouth are likely to attract large numbers of visitors in the early years of the Refuge's establishment; therefore, it would be important to establish on-site staffing and visitor facilities early in the CCP. Initial facility development is crucial orienting visitors and educating them about the Refuge's resources. The facilities would be upgraded over the life of the CCP, culminating in the construction of a visitor center by year 15.

During the first years of the Refuge's establishment, while management resources are focused on habitat conservation and visitor use facility development, the Service staff would rely on O&M facilities at RMA. With the inclusion of equestrian trail uses, additional O&M resources would be allocated to the development of large parking areas (that can accommodate horse trailers) and additional trail maintenance. Noxious weed control along multi-use trails would be more intensive. Once visitor use facilities are established, the maintenance facilities would be constructed and interpretive signage and trails would be upgraded. Maintenance facilities would be sufficient in size so that no satellite facilities at RMA would be required.

Strategies:

6.2.1-6.2.5 – *Same as A.*

6.2.6- 6.2.8 – *Same as B.*

6.2.9 – Construct a larger (approximately 2,500 to 3,000 square feet) maintenance/storage facility.

6.2.10-6.2.11 - *Same as B.*

Objective 6.3—Fencing

Alternative A

Upon the Refuge's establishment and throughout the life of the CCP, maintain the existing barbed-wire stock fence. The fence would line the entire perimeter and would be suitable for excluding neighboring livestock from trespassing on the Refuge.

Rationale: State law requires that a stock fence enclose the Refuge to prevent livestock trespassing. Visitor safety and wildlife habitat goals would be accomplished through signage, staff contact with visitors and internal fencing of off-limits areas. The Service would also work closely with DOE to

© Nelson, RFETS



Nuttall's larkspur.

ensure that the DOE retained land boundary is clearly demarcated.

Strategies:

6.3.1 – Attach boundary signage to the perimeter fence and any fencing delineating the DOE retained area.

6.3.2 - Advise DOE on the use of signage and fencing to demarcate the boundary of lands subject to institutional controls.

Alternative B

Same as A.

Rationale: Same as A.

Strategies: Same as A.

Alternative C

Same as B.

Rationale: Same as B.

Strategies: Same as A.

Alternative D

Same as B.

Rationale: Same as B.

Strategies: Same as A.

Objective 6.4—Cultural Resources - Lindsay Barn

Alternative A

Within 15 years of Refuge establishment, develop an inventory of cultural resources found on the Refuge and maintain the Lindsay Ranch barn.

Rationale: Although the Lindsay Ranch structures are not eligible for listing in the National Register of Historic Places, they are valued by the public and present an opportunity to interpret the early ranching era at the Refuge. The Lindsay Ranch structures including a barn and house are not structurally sound and are in varying states of decay. In order to preserve the scenic value of the cultural resource, the Service and DOE initiated a project to stabilize the barn in 2003. Since the ranch house is not structurally sound and presents a safety concern, the Service chose to concentrate its stabilization efforts on the barn. The house would be fenced off or taken down to minimize safety hazards. Should partners raise sufficient funds to stabilize and interpret the ranch house, the Service will be amenable to working with them to complete such a project. Over time, additional cultural resources may be uncovered on the Refuge. The Service would maintain a record of identified cultural resources.

Strategies:

6.4.1 – Pursue partnerships to help fund the ongoing stabilization of the Lindsay Ranch barn.

6.4.2 – Maintain an inventory of all cultural resources found on site.

6.4.3 – Following all prescribed fires in the Rock Creek Reserve, conduct limited surveys of burned areas for archaeological or cultural resources or artifacts.

Alternative B

By year five, develop a step-down plan for the preservation of all cultural resources on the Refuge. By the end of the CCP, interpret the Lindsay Ranch barn.

Rationale: Same as A, plus where appropriate, provide interpretive signage to help visitors better understand the history of the Lindsay Ranch.

Strategies:

6.4.1-6.4.2 – *Same as A.*

6.4.3 – Following all prescribed fires, survey burned areas for archaeological or cultural resources or artifacts.

6.4.4 – Work with interested parties and organizations to interpret the Lindsay Ranch and the story of homesteading on the Refuge.

6.4.5 – Use trail signage to identify the historic stage-coach stop and apple orchard in the Woman Creek drainage.

Alternative C

By year five, develop a step-down plan for the preservation of all cultural resources on the Refuge. Remove the Lindsay Ranch structures and restore the area to native vegetation.

Rationale: The Lindsay Ranch structures were identified as “ineligible” for listing in the National Register of Historic Places and stabilization and/or preservation of the barn and house is not mandatory. Given Alternative C’s emphasis on ecological restoration, the Lindsay Ranch structures would be removed and the site would be restored to pre-settlement conditions. Prior to demolition, the Ranch structures be documented with photographs. Over time, additional cultural resources may be uncovered on the Refuge. The Service would maintain a record of all identified cultural resources.

Strategies:

6.4.1-6.4.2 – *Same as A.*

6.4.3 – *Same as B.*

6.4.6 – Restore stream crossings and revegetate roads within the Lindsay Ranch site.

6.4.7 – Use native vegetation to restore the area to pre-settlement conditions.

Alternative D

Same as B.

Rationale: Same as B.

Strategies:

6.4.1-6.4.2 – *Same as A.*

6.4.3 – Following all wildfires, survey burned areas for archaeological or cultural resources or artifacts.

6.4.4-6.4.5 – *Same as A.*

Objective 6.5—Cultural Resources - Site History

Alternative A

Not applicable to Alternative A.

Alternative B

Within 5 years of the Refuge's establishment, develop a cooperative partnership with interested stakeholders, including the Cold War Museum, to interpret the history of the Refuge.

Rationale: The history of the Refuge represents diverse periods of time and topics ranging from Native American history to the settlement of the western frontier and nuclear weapons production during the Cold War. The history and cultural resources of the Refuge are of interest to many groups and individuals. Interested stakeholders, including the Cold War Museum, would be key partners in interpreting the site's history and cultural resources and securing funding for interpretation and stabilization efforts.

Strategies:

6.5.1 – Work with a variety of interested entities to manage and interpret the history of the site as it evolved through time. Interpretation programs would illuminate the historical evolution of the site including Native Americans, early settlement, ranching and Cold War histories.

6.5.2 – Work with appropriate state and federal agencies to manage the site's cultural resources appropriately.

Alternative C

Not applicable to Alternative C.

Alternative D

Same as B.

Rationale: Same as B.

Strategies: Same as B.

2.6. STAFFING AND BUDGETS

Refuge budgets generally include ongoing operations funds for staffing, maintenance and utility needs. Estimated staff for each alternative is the minimum necessary to accomplish the goals of that alternative. A detailed list of this staff along with the costs for each alternative are provided in Appendix F. Maintenance expenses would cover activities necessary to keep facilities and equipment in good working order. Utilities would vary by alternative and would include gas, electrical, phone and cleaning. In addition, restoration and implementation costs would be calculated for each



© Nelson, RFETS

Staffing and budget would be allocated to protect and restore native grasses such as forktip three-awn.

alternative based on estimated needs. These one-time items associated with opening the Refuge would include costs to restore habitat, build facilities and purchase equipment. Fire management funds are administered from a different funding source and are listed separately.

Because the Refuge would be managed as part of a complex that includes the RMA and Two Ponds, there would be costs that could be shared between the facilities. Therefore, both operations and restoration and implementation costs have been broken out between items that would require new funding for the Refuge and items that would be covered from the complex's existing base funding. Furthermore, large equipment needed for restoration activities is assumed to be shared with the other refuges in the complex and is included with existing base funding.

Estimated costs for alternatives are summarized in Table 5. Costs are presented in 2003 dollars. Because the Refuge would not be established for several years, these numbers would need to be adjusted for inflation when the Refuge's funding request is made.

Table 5. Estimated Costs of Alternatives

Alternative	Cost over 15 Years (millions 2003\$)	Annual Operations (thousands)	Restoration and Implementation (millions)	Fire Management (millions)	Major Components of Costs
A	\$3.7	\$164	\$0.3	\$1.6	Small staff, limited restoration
B	\$8.6	\$543	\$1.2	\$1.6	Balances public-use and restoration efforts
C	\$11.5	\$824	\$0.9	\$1.6	Restoration staff, off-site office lease
D	\$16.6	\$1,037	\$4.5	\$1.1	Increased public use staff and facilities

ALTERNATIVE A

In Alternative A, the currently planned management approach described in the Rock Creek Reserve Integrated Natural Resources Management Plan (DOE 2000) would be maintained. This would require two employees with an annual funding target of about \$164,000 for operations. Restoration and implementation costs amount to about \$275,000, most of which is for maintenance equipment, facilities, restoration of unused roads and stabilization of the Lindsay Ranch barn. Fire management activities on the Refuge will require the equivalent of three employees (2 full-time and 2 seasonals) with annual funding of \$133,000, as well as an up-front expenditure of \$125,000 for equipment and supplies. Total costs over the 15-year period for this alternative would amount to about \$3.7 million.

ALTERNATIVE B

Compared to Alternative A, Alternative B would require higher funding levels. It would require the equivalent of four employees with an annual funding target of \$543,000 for operations. In addition, this alternative would require \$1.2 million in restoration and implementation costs, over a third of which is for maintenance equipment and related storage. Remaining funds requested are for habitat restoration supplies and visitor-related facilities. Fire management activities on the Refuge will require the equivalent of three employees (2 full-time and 2 seasonals) with annual funding of \$133,000, as well as an up-front expenditure of \$125,000 for equipment and supplies. Estimated costs in 2003 dollars over the 15-year period for this alternative are \$8.6 million.

ALTERNATIVE C

Alternative C would require more funding than Alternatives A and B, but less than Alternative D. This is mainly due to the addition of one employee - for a

total of five - and the use of leased off-site office space rather than new construction on-site. Staff and their funding would shift emphasis to habitat conservation and restoration activities, with annual operations costs estimated at about \$824,000. One-time restoration and implementation activities would require about \$882,000, primarily focused on restoration supplies, maintenance equipment and related storage. Fire management activities on the Refuge would require the equivalent of three employees (2 full-time and 2 seasonals) with annual funding of \$133,000, as well as an up-front expenditure of \$125,000 for equipment and supplies. Estimated costs in 2003 dollars over the 15-year period for this alternative are \$11.5 million.

ALTERNATIVE D

Alternative D would require the largest amount of funding because of its facility development and staffing requirements. Although some funding would be used for habitat conservation and restoration, the staffing and budget would be weighted toward public use. Alternative D would require eight full-time employees. Annual operations costs are estimated slightly over \$1 million, due to both an increased public use staff and increased facility maintenance costs. Restoration and implementation costs would be \$4.5 million, primarily due to the addition of a \$3 million visitor center. Fire management activities on the Refuge would require the equivalent of two employees with annual funding of about \$84,000, as well as an up-front expenditure of \$125,000 for equipment and supplies. Estimated costs in 2003 dollars over the 15-year period for this alternative are \$16.6 million.

2.7. PARTNERSHIP OPPORTUNITIES

The Service would pursue opportunities to work with federal, state and local agencies, conservation groups, adjacent landowners and other interested parties to advance the purpose of the Refuge and to benefit

surrounding communities. Many natural resource management issues such as invasive weed control, wildfire management, wildlife corridors, recovery of declining species and impacts to resources caused by visitors would need to be coordinated across boundaries. Collaboration with surrounding open space and natural resource entities such as Jefferson County, City of Boulder, Boulder County, City and County of Broomfield, City of Westminster, City of Arvada and CDOW would be instrumental in achieving the Service's ecosystem management goals. The Service would also develop and maintain mutual aid agreements related to fire control with adjacent jurisdictions.

The Service would encourage and support research and management studies on Refuge lands that inform natural resource management decisions. Scientific research partnerships would give the Service opportunities to analyze independently collected data and use research results to develop adaptive management strategies. As data-sharing partners, university faculty, staff and students as well as independent scientists would be instrumental in helping the Service develop baseline biological data.

In Alternatives B and D, the Service also would collaborate with interested organizations such as the Cold War Museum to interpret the history of the Rocky Flats site and communicate its story to Refuge visitors. Other potential partnerships related to hunting, environmental education, trail use and interpretation may involve local universities, school districts, conservation and/or historical organizations, open space agencies, recreation user groups and the CDOW.

Volunteer partnerships in Alternatives B and D would be cultivated with individuals interested in learning more about the Refuge and assisting staff with various aspects of Refuge operations. The Service also would support the development of a "Friends" group for the new Refuge. Such a group would play an important role in leveraging private resources and public support for Refuge programming.

2.8. MONITORING AND EVALUATION

In all alternatives, the Service would adopt an adaptive management approach to the implementation of the proposed management objectives. Adaptive management is "the rigorous application of management, research and monitoring to gain information and experience necessary to assess and modify management activities...A process that uses feedback from Refuge research and monitoring and

© Nelson, RFETS



Orange paintbrush.

evaluation of management actions to support or modify objectives and strategies at all planning levels" (U.S Fish & Wildlife Service 2000). Because the Refuge is new, ongoing monitoring of the effectiveness of habitat restoration and conservation and public use is essential for adapting and refining objectives and strategies to ensure management goals are achieved. Monitoring and evaluation has been integrated into many resource management and public use objectives.

The Service would establish biological monitoring programs to assess the effect of restoration and conservation measures on habitat condition. The Service would monitor certain habitat conditions to determine if the management strategies are serving the needs of native wildlife species. For example, periodic Preble's surveys would help determine the effects of riparian habitat protection and enhancement efforts. To assist in the control of invasive species such as Dalmatian toadflax and diffuse knapweed and to restore native plant communities, the Service would evaluate the use of different treatments and control mechanisms for the most efficient forms of weed suppression. The Service would evaluate the use of an IPM approach and, depending on the alternative selected, prescribed fire, managed grazing, or use of a combination of these techniques. The monitoring of vegetation transects would help gauge the long-term effects of weed management and restoration efforts in the xeric tallgrass community.

Visitor use surveys in Alternatives B and D would measure the extent to which visitors feel welcome, safe and comfortable at the Refuge and the extent to

which they learned about the Refuge system, safety issues and the Service's stewardship role during their visits. In addition to measuring visitor satisfaction, the surveys would indicate the effectiveness of public use programming in increasing visitors' understanding and appreciation of natural resources and promoting environmentally responsible behavior.

This CCP is designed to be effective for 15 years. It would undergo periodic review to evaluate whether the established goals and objectives are being met and strategies are being implemented. Throughout the life of the CCP, the Service would monitor Refuge resources, assess whether the goals and objectives for the Refuge are being achieved and if necessary, adjust specific management prescriptions to better respond to the long-term needs of the Refuge.

2.9. ALTERNATIVE CONSIDERED BUT ELIMINATED

During the initial alternatives development workshop, Service staff considered a "custodial management" alternative. In this alternative, the Service would have taken a "hands-off" approach to Refuge stewardship, limiting management to areas that the Service is legally obligated to address. These areas would include the containment of weeds, the maintenance of fencing and the preservation of federally listed threatened and endangered species. Unlike the No Action Alternative, under this alternative the Service would not manage the Rock Creek Reserve in accordance with the Rock Creek Reserve Integrated Natural Resources Management Plan.

This alternative was eliminated from detailed analysis in the EIS. The rationale for eliminating this alternative included:

- This alternative is similar to the No Action Alternative
- Custodial management would lead to increased degradation of wildlife and habitat
- This alternative is not consistent with the purposes of the Refuge and the mission of NWRS

2.10. REASONABLY FORESEEABLE ACTIVITIES

Reasonably foreseeable future activities are actions and activities that are independent of the Proposed Action for the Refuge, but could result in cumulative effects when they are combined with the effects of the proposed alternatives. They are anticipated to occur

regardless of which Refuge alternative is selected. The effects of these activities are described in the *Cumulative Impacts* sections under each resource in Chapter 4.

Reasonably foreseeable future activities within or near the Refuge are represented in Figure 11 and fall into the following categories:

- Urban Development
- Regional Transportation Improvements
- Resource Development and Assessment
- Open Space and Trails
- DOE Monitoring and Maintenance
- Cold War Museum

URBAN DEVELOPMENT

According to urban growth projections by the Denver Regional Council of Governments (DRCOG), the following areas are anticipated to be developed by 2020 (Figure 11):

- A strip of private land along highway 93 along the west side of Rocky Flats
- Portions of Broomfield and Westminster between Great Western Reservoir and the Jefferson County Airport
- Southwestern portions of Superior near Highway 128
- Portions of Arvada directly south of the Refuge (Vauxmont development - see below)

For many years, the City of Arvada has envisioned urban development in an area immediately south of the Refuge. Arvada annexed the area in 1988 and zoned it for mixed residential and commercial development. More recently, plans have been underway for a mixed residential and commercial development called Vauxmont. Currently no construction date is anticipated and no formal plans have been reviewed by the City of Arvada; however, a metropolitan district has been established to provide water and other utilities to the future development. The Vauxmont development will be immediately adjacent to the southern boundary of the Refuge.

REGIONAL TRANSPORTATION IMPROVEMENTS

CDOT and the Federal Highway Administration are

studying long-range regional transportation needs in the northwest quadrant of the Denver Metropolitan area. The study area of the Northwest Corridor EIS is approximately bounded by the foothills on the west, Simms Street/96th Street on the east, the intersection of the Northwest Parkway/Tape Drive/Carbon Road/96th Street on the north and the intersection of C-470/I-70 on the south.

The study is considering a full range of possible multi-modal options, including possible general transit options, possible improvement of existing roadways, possible new highways and enhancements, possible implementation of a tolling enterprise, as well as transportation system management and transportation demand management items. The study was initiated in 2003 and will likely take 3 to 4 years to complete.

As part of the environmental review process for the Northwest Corridor Transportation Study, CDOT is coordinating with federal, state, and local agencies, including the Service. The Service has provided and will continue to provide comments to CDOT regarding the Northwest Corridor Transportation Study. CDOT will consult with the Service on any improvement associated with the study that may affect a threatened or endangered species.

While the completion of the Northwest Corridor Transportation Study, and its eventual recommendations for transportation improvements in the areas surrounding Rocky Flats are reasonably foreseeable, the Service has determined that transportation improvements in any specific location are not reasonably foreseeable. A specific improvement has not been funded, is not in the DRCOG's Regional Transportation Plan, and therefore is speculative. "Reasonably foreseeable" actions are not speculative—they have been approved, are included in short- to medium-term planning and budget documents prepared by government agencies or other entities, or are likely given trends (EPA 1999).

The Refuge Act's §3174 prohibits the construction of a public road through the Refuge. However, the DOE can make available land along the eastern boundary of the Refuge for the sole purpose of transportation improvements along Indiana Street. Land made available under §3174 may not extend more than 300 feet from the west edge of the existing Indiana Street right of way. To be made available, DOE must receive an application submitted by a county, city, or other political subdivision of the State of Colorado that includes documentation demonstrating that the transportation improvements for which the land is to

be made available:

- Are carried out so as to minimize adverse effects on the management of the Refuge as a wildlife refuge
- Are included in the regional transportation plan of the metropolitan planning organization designated for the Denver Metropolitan area

Additionally, §3178 of the Refuge Act requires that the CCP address and make recommendations on the land to be made available. In Section 4.16 of this CCP/EIS, three possible alternative widths, 50 feet, 125 feet and 300 feet, are analyzed. A range of widths is analyzed to provide information to the Service and the DOE regarding lands that could be made available. The DOE will be responsible for determining the width of any transferred lands, but it is likely the width would range between 50 and 300 feet. The transfer of a 50-foot right of way would make the right of way along Indiana Street 100 feet wide, wide enough for a four-lane, undivided road. Similarly, the transfer of a 100-foot right of way would make the right of way along Indiana Street 200 feet wide. A 100-foot or 200-foot wide right of way would not be wide enough for a four-lane, divided highway. Typical right of way widths for a four-lane, divided highway, are 300 to 400 feet. The transfer of a 300-foot right of way would make the right of way along Indiana Street 350 feet wide, wide enough for a four-lane, divided highway. The transfer would be designed to help meet regional transportation needs.

Section 4.16 discusses two issues related to potential transportation improvements near the Refuge. The first part of Section 4.16 discusses the lands up to 300 feet from the west edge of the Indiana Street right-of-way that could be made available. The second part of Section 4.16 discusses potential concerns that the Service would have related to any transportation improvements along Indiana Street, Highway 128, and Highway 93. Improvements to these roadways are among the universe of alternatives currently being considered by the Northwest Corridor Transportation Study (CDOT 2004).

RESOURCE DEVELOPMENT AND ASSESSMENT

Mining

A geologic formation called the Rocky Flats Alluvium is found in the western half of the Refuge and in surrounding areas. It is valued as an aggregate source and is currently being mined in the Refuge area. The

U.S. Government does not own all of the subsurface mineral rights at the Refuge. Currently, three active mining permits are within the Refuge: the Bluestone sand and gravel quarry, the Lakewood Brick and Tile mine, and the Church Ranch - Rocky Flats Pit (Figure 11).

The Service believes that the exercise of these existing privately owned mineral rights, particularly surface mining of gravel and other aggregate material, at Rocky Flats will have an adverse impact on the management of the Refuge. The Service does not believe it can manage the Refuge for meeting the purposes of §3177(e)(2) of the Refuge Act if certain mineral rights are exercised. Accordingly, the Service will not accept transfer of administrative jurisdiction for lands subject to the mining of gravel and other aggregate material at Rocky Flats from DOE until the United States owns the mineral rights of the land to be transferred to the Service, or until the lands that are subject of mining have been reclaimed to a mixed prairie grassland community.

The permit for the Church Ranch- Rocky Flats Pit includes stipulations that mining will not encounter groundwater, and will stay a minimum of 2 feet above groundwater (CDMG 2004; Church Ranch 2004). The permits for the Bluestone Pit and the Lakewood Brick and Tile operation do not have stipulations about groundwater.

Several off-site mining areas are located northwest of the Refuge along Highway 93. In the permits, mining can continue until the resource within the mine permit area is depleted.

Reservoir Expansion

The City and County of Broomfield owns and operates Great Western Reservoir to store irrigation water. Great Western Reservoir is located along Walnut Creek, about ½ mile east of the Refuge. Broomfield plans to increase the size of the reservoir from 2,370 acre-feet to 12,000 acre-feet. Broomfield currently has sufficient water to fill the reservoir and plans to complete the expansion within the next 10 to 20 years.

National Wind Technology Center

The DOE's National Renewable Energy Laboratory operates the National Wind Technology Center (NWTC) immediately northwest of the Refuge. The NWTC is primarily used for wind energy research, development and testing and currently has between 12 and 15 wind turbines. While the number of wind turbines at NWTC would vary in accordance with the

nature of future research, the facility is likely to continue such operations into the foreseeable future (DOE-NREL 2002).

Utility and Ditch Access

Several outside entities own easements for natural gas, electrical, fiber optic and other utility lines across the Refuge. In addition, several other outside entities own water rights that are conveyed across the Refuge through ditches such as the Smart Ditch, Upper Church Ditch and McKay Ditch. The owners and managers of these easements and water rights will continue to access the Refuge to maintain their respective utilities and water rights.

OPEN SPACE AND TRAILS

Recreational Trails

The Refuge is bounded on three sides by designated open space land owned and managed by local governments. Several new trails are planned in these areas, including:

- A new trail on City of Boulder Open Space land that parallels Highway 128, connecting the Coalton Trail to the Greenbelt Plateau trailhead near Highway 93
- A new trail across the City and County of Broomfield's Great Western Open Space to access Indiana Street

The City of Arvada has planned several trails along the Big Dry Creek drainage between the Refuge and Highway 72 to the south. These trails are not associated with currently designated open space, but are within the planned Vauxmont development described above.

Front Range Trail

In 2001, Colorado State Parks initiated a planning project to designate a continuous trail route along the Front Range of Colorado. As planned, the Front Range Trail would parallel the east side of Highway 93 between the highway and the Refuge's western boundary. While the concept of this trail in this general location is certain, the exact alignment has yet to be determined.

Coal Creek Canyon Park

Jefferson County Open Space owns 2,807 acres of land near the mouth of Coal Creek Canyon, about 2 miles west of the Refuge. Completed in 2001, the

management plan for this property outlines management unit designations, trails and facilities. However, the management plan also recommends postponing any trail or facility development until at least 2006 so that development plans can be consistent with surrounding land uses (JCOS 2001).

U.S. Department of Energy Monitoring and Maintenance

The Rocky Flats site is currently undergoing cleanup by the DOE. The Refuge would not be established until cleanup and certification by EPA is complete (currently scheduled for 2006). It is not known how long cleanup might take, or what effects cleanup activities might have on Refuge resources and uses (see discussion in Section 1.8). The DOE will retain primary jurisdiction over some of the lands surrounding the Industrial Area and will require ongoing access to the Refuge after cleanup for monitoring and maintenance purposes.

COLD WAR MUSEUM

The Rocky Flats Cold War Museum was founded in 2001 as a non-profit organization with the intent of establishing a museum that documents the historical, scientific and environmental aspects of the former nuclear weapons plant at Rocky Flats. The organization has been working to establish a location for a museum and funding to construct it. In August 2003, the Rocky Flats Cold War Museum released a Museum Feasibility Study that investigated potential sites, funding sources and program requirements for a museum. The study recommended the consideration of three sites for a museum:

- Existing Rocky Flats Visitor's Center (Buildings 60 and 61) at the west entrance to Rocky Flats
- Location near the entrance of the National Wind Technology Center off of Highway 128
- Location within the future Vauxmont development off of Highway 72 south of the Refuge

The study recommended a museum location at or near the existing Rocky Flats Visitor's Center because of its proximity to the site. If the necessary funding is secured, the organization hopes to open the Rocky Flats Cold War Museum in 2006 (Informal Learning Experiences 2003).

2.11. REFERENCES:

- Anderson, B.W. and R.D. Ohmart. 1986. Vegetation. in A.Y. Cooperrider, R.J. Boyd and H.R. Stuart, eds. Inventory and Monitoring of Wildlife Habitat. U.S. Department of Interior, Bureau of Land Management Service Center. Denver, Colorado.
- Burnham, K.P., D.R. Anderson and J.L. Laake. 1980. Estimation of density from line transect sampling of biological populations. *Wildlife Monographs*, 72. 202 pp.
- CDOT. 2004. Northwest Corridor EIS. Materials Presented at Public Meetings in April 2004. <http://www.dot.state.co.us/northwestcorridoreis/involvement/apr04boards.cfm>. Accessed June 9, 2004.
- Church Ranch. 2004. Technical Revision to Rocky Flats Pit, Permit number M-1987-113.
- Colorado Division of Minerals and Geology (CDMG). 2004. Permit issuance, Rocky Flats Pit, Permit number M-1987-113, with rider. January 13, 2004.
- Compton, S.A. and D.A. Hugie. 1993. Status Report on *Zapus hudsonius preblei*, a candidate Endangered Species. USDI Fish and Wildlife Service, Denver, Colorado.
- Department of Energy – National Renewable Energy Laboratory. 2002. Final Site-Wide Environmental Assessment of National Renewable Energy Laboratory's National Wind Technology Center.
- Department of Energy Rocky Flats Environmental Technology Site and the U.S Fish & Wildlife Service. 2001. Integrated Natural Resources Management Plan, Environmental Assessment and Finding of No Significant Impacts for Rock Creek Reserve, 2001-Closure.
- EPA. 1999. Consideration of Cumulative Impacts in EPA Review of NEPA Documents. U.S. Environmental Protection Agency, Office of Federal Activities (2252A). EPA 315-R-99-002/May 1999.

Jefferson County Open Space. 2001. Executive Summary: Coal Creek Canyon Park Management Plan.

Informal Learning Experiences, Inc. 2003. Final Report: Rocky Flats Cold War Museum Scoping Study. Washington, D.C.
<http://www.rockyflatscoldwarmuseum.org/feasreport.pdf>.

Kaiser-Hill, 1997. High-value vegetation survey plan for the Rocky Flats Environmental Technology Site. Golden, Colorado.

Kaiser-Hill. 2001. Ecology Field Monitoring Plans for the Rocky Flats Environmental Technology Site. Golden, Colorado.

Kaiser-Hill. 2002. 2001 Annual Vegetation Report for the Rocky Flats Environmental Technology Site.

Owensby, C.E. 1973. Modified step-point system for botanical composition and basal cover estimates. *Journal of Range Management* 26:303-303.

U.S. Fish & Wildlife Service. 2000. Final Refuge Planning Policy. FWM 355. Part 602 National Wildlife Refuge System Planning.

Table 6. Summary of Objectives and Strategies

ALTERNATIVE A – No Action		ALTERNATIVE B – Wildlife, Habitat, and Public Use (Preferred Alternative)	
WILDLIFE AND HABITAT MANAGEMENT			
Preble’s Habitat Management	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Protect and maintain Preble’s habitat throughout the Refuge. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Survey Preble’s locations and habitat every 2-3 years. 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Protect, maintain, and improve Preble’s habitat throughout the Refuge. <p><i>Strategies:</i></p> <p>-----></p> <ul style="list-style-type: none"> € If necessary, exclude grazing/browsing animals to protect habitat. € Seek funding/partnerships to monitor impacts of recreation on Preble’s. 	
Xeric Tallgrass Management	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Maintain the existing extent of xeric tallgrass habitat (in Rock Creek Reserve). <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Within 2 years, develop vegetation management plan. € Monitor every 2-3 years to determine species composition, document the effectiveness of weed control applications, and assess impacts of disturbance on plant communities in the Rock Creek Reserve. € Use prescribed burning, and mowing to stimulate the growth of native plants in the Rock Creek Reserve. € Suppress all natural wildfires. € Participate in regional xeric tallgrass prairie conservation efforts. 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Maintain xeric tallgrass habitat across the Refuge with a native species composition of 80%. <p><i>Strategies:</i></p> <p>-----</p> <ul style="list-style-type: none"> € Monitor every 2-3 years to determine species composition, document effectiveness of weed control applications, assess impacts of disturbance on plant communities across Refuge. € Use prescribed fire, grazing, mowing and other tools to stimulate the growth of native plants. <p>-----</p> <p>-----</p>	
Mixed Grassland Prairie Management	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Maintain and improve the vigor and native species composition of short and mesic mixed grassland habitat (in Rock Creek Reserve). <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Allow short and mesic prairie to support sustainable prairie dog expansion. € Maintain short and mesic prairie to support the reintroduction of sharp-tailed grouse or other species. € Use prescribed fire, and mowing to stimulate the growth of native plants in the Rock Creek Reserve. € Suppress all natural wildfires. 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € <i>Same as A, except:</i> Restore hay meadow and other areas to a native mixed grassland community. <p><i>Strategies:</i></p> <p>-----</p> <p>-----</p> <ul style="list-style-type: none"> € Use prescribed fire, grazing, mowing and other tools to stimulate the growth of native plants. <p>-----</p> <ul style="list-style-type: none"> € Restore hay meadow and other areas to native mixed grassland. 	

ALTERNATIVE C – Ecological Restoration	ALTERNATIVE D – Public Use
<p><i>Objective:</i></p> <hr style="border-top: 1px dashed black;"/> <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € More extensive monitoring to include surveys of vegetation and plant diversity in Preble’s habitat every 2-3 years. 	<p><i>Objective:</i></p> <hr style="border-top: 1px dashed black;"/> <p><i>Strategies:</i></p> <hr style="border-top: 1px dashed black;"/> <ul style="list-style-type: none"> € Monitor impacts of trails and recreation on Preble’s (with or without additional funding/partnerships).
<p><i>Objective:</i></p> <hr style="border-top: 1px dashed black;"/> <p><i>Strategies:</i></p> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/>	<p><i>Objective:</i></p> <hr style="border-top: 1px dashed black;"/> <p><i>Strategies:</i></p> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <ul style="list-style-type: none"> € Use mowing and other tools. Prescribed burning and grazing would not be used. <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/>
<p><i>Objective:</i></p> <hr style="border-top: 1px dashed black;"/> <p><i>Strategies:</i></p> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/>	<p><i>Objective:</i></p> <p>Same as A: Maintain and improve the vigor and native species composition.</p> <p><i>Strategies:</i></p> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/>

ALTERNATIVE A – No Action		ALTERNATIVE B – Wildlife, Habitat, and Public Use (Preferred Alternative)
WILDLIFE AND HABITAT MANAGEMENT (continued)		
Road Restoration and Revegetation	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Revegetate 12 miles of unused roads and 7 stream crossings in Rock Creek Reserve. (To be completed by the end of the plan). <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Allow natural revegetation of lightly used roads and stream crossings. € In some locations, regrade and seed roads. € Survey for noxious weeds and apply IMP techniques to control noxious weeds in seeded road corridors. 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Revegetate 26.3 miles of unused roads and 13 stream crossings across the Refuge. (To be completed by the end of the plan). <p><i>Strategies:</i></p> <p>-----</p> <p>-----</p> <p>-----</p> <ul style="list-style-type: none"> € Every 3 years survey to determine ground cover, vegetation density, species composition, and effectiveness of weed control and impact of disturbances.
Weed Management	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € <i>Within Rock Creek Reserve:</i> <ul style="list-style-type: none"> - Reduce the density of diffuse knapweed and Dalmation toadflax populations 15% within the first 5 years, 25% within 10 years, and 50% within 15 years. - Reduce the density and halt the spread of other noxious weed species, especially Canada thistle, by 50% within 15 years. - Prevent the establishment of species on County and State weed lists not yet observed on the Refuge. € <i>Outside the Rock Creek Reserve:</i> <ul style="list-style-type: none"> - Limit and control the spread and density of existing weed infestation. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Employ an integrated pest management (IPM) approach to include herbicides, biological controls, grubbing/hand-pulling, collecting tumbleweeds, and limited use of prescribed fire (within Rock Creek Reserve only). € Annually map perimeters of weed infestations and treatment sites. 	<p><i>Objective:</i></p> <p><i>Same as A with the following changes:</i></p> <ul style="list-style-type: none"> € <i>Refuge Wide:</i> <ul style="list-style-type: none"> - Reduce diffuse knapweed and Dalmation toadflax to 15%, 30%, and 60% for 5, 10 and 15 years respectively. - Reduce the density and halt the spread of other noxious weed species, especially Canada thistle, by 50% within 15 years. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € <i>Same as A, except:</i> Add prescribed fire and managed grazing Refuge-wide to the list of weed management tools. <p>-----</p> <ul style="list-style-type: none"> € Develop comprehensive integrated pest management plan. € Informally survey for new infestations along roadways, trail, restoration areas and disturbed sites. € Establish interior fencing to collect wind dispersed weeds; burn along fence lines to dispose of collected weeds.

ALTERNATIVE C – Ecological Restoration	ALTERNATIVE D – Public Use
<p><i>Objective:</i> <i>Same as B except:</i> ☒ Revegetate 25.7 miles of unused roads and 13 stream crossings.</p> <p><i>Strategies:</i></p> <p>-----></p> <p>-----></p> <p>-----></p> <p>-----></p>	<p><i>Objective:</i> <i>Same as B except:</i> ☒ Revegetate 24.3 miles of unused roads and 6 stream crossings.</p> <p><i>Strategies:</i></p> <p>-----></p> <p>-----></p> <p>-----></p> <p>-----></p>
<p><i>Objective:</i> <i>Same as B</i></p> <p>-----></p> <p>-----></p> <p><i>Strategies:</i></p> <p>-----></p> <p>-----></p> <p>-----></p> <p>-----></p> <p>-----></p>	<p><i>Objective:</i> <i>Same as B except:</i> ☒ Refuge Wide: - Reduce diffuse knapweed and Dalmation toadflax to 10%, 15%, and 300% for 5, 10 and 15 years respectively.</p> <p>-----></p> <p><i>Strategies:</i></p> <p>☒ <i>Same as A:</i> Prescribed fire and grazing would not be a part of the IPM techniques.</p> <p>-----></p> <p>-----></p> <p>☒ No informal surveys.</p> <p>☒ No interior fencing for weed management.</p>

ALTERNATIVE A – No Action		ALTERNATIVE B – Wildlife, Habitat, and Public Use (Preferred Alternative)
WILDLIFE AND HABITAT MANAGEMENT (continued)		
Deer and Elk Management	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ☒ Allow CDOW to establish target populations and manage deer and elk as needed. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ☒ Use culling to control populations. ☒ Cooperate with CDOW in monitoring and controlling populations. ☒ Monitor every 2 years to evaluate ungulate impacts on riparian and upland shrub communities in Preble’s habitat. 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ☒ Within 3 years, establish deer and elk population targets to be achieved by year 5. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ☒ Use public hunting, culling, temporary exclosures, or hazing to manage populations. <hr style="border-top: 1px dashed black;"/> <ul style="list-style-type: none"> ☒ Compared to A, this alternative would have more extensive monitoring: <ul style="list-style-type: none"> - Annual abundance and density counts. - Photo monitoring to document any habitat degradation. <ul style="list-style-type: none"> ☒ Work with others to protect movement corridors.
Prairie Dog Management	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ☒ Allow unlimited expansion of prairie dog populations outside of recognized Preble’s habitat. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ☒ Trap and relocate, or use other methods, to exclude prairie dogs from sensitive habitat areas. ☒ Do not accept prairie dogs from off-site locations. 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ☒ Limit prairie dog populations to 750 acres outside of recognized Preble’s habitat and xeric tallgrass habitat throughout the Refuge. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ☒ Annually monitor distribution of prairie dog populations. <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <ul style="list-style-type: none"> ☒ Monitor for plague.
Species Reintroduction	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ☒ Facilitate reintroduction of native extirpated species by or in coordination with CDOW. ☒ Monitor redbelly dace and common shiner populations (introduced 2003) until successfully established. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ☒ Coordinate with CDOW on species release, monitoring, and habitat maintenance. 	<p><i>Objective:</i></p> <p><i>Same as A except:</i></p> <ul style="list-style-type: none"> ☒ Within 3 years, evaluate suitability for additional reintroduction of native extirpated species such as sharp-tailed grouse in coordination with CDOW. <hr style="border-top: 1px dashed black;"/> <ul style="list-style-type: none"> ☒ Prioritize species to be reintroduced. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ☒ Oversee and assist CDOW on species release, monitoring, and habitat maintenance. ☒ If suitable, complete management plan for sharp-tailed grouse within first 2 years. ☒ Annually monitor native fish in Rock Creek and introduce to other drainages.

ALTERNATIVE C – Ecological Restoration	ALTERNATIVE D – Public Use
<p><i>Objective:</i></p> <hr style="border-top: 1px dashed black;"/> <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ☒ Use culling and other strategies. <hr style="border-top: 1px dashed black;"/> <ul style="list-style-type: none"> ☒ Include more extensive monitoring compared to B: <ul style="list-style-type: none"> - Seasonal ungulate counts to determine abundance, density and movement patterns. - Annual survey of population size and composition, fawning rates and fawn survival. <hr style="border-top: 1px dashed black;"/>	<p><i>Objective:</i></p> <hr style="border-top: 1px dashed black;"/> <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ☒ Use public hunting, culling, or other strategies. <hr style="border-top: 1px dashed black;"/> <ul style="list-style-type: none"> ☒ Monitor every 3 years to evaluate ungulate impacts on riparian and upland shrub communities in Preble’s habitat. <hr style="border-top: 1px dashed black;"/>
<p><i>Objective:</i></p> <p><i>Same as B except:</i></p> <ul style="list-style-type: none"> ☒ Limit prairie dog populations to 500 acres. <p><i>Strategies:</i></p> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <ul style="list-style-type: none"> ☒ Informally monitor for plague and consult with local public health officials. 	<p><i>Objective:</i></p> <p><i>Same as B except:</i></p> <ul style="list-style-type: none"> ☒ Limit prairie dog populations to 1,000 acres. <p><i>Strategies:</i></p> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <ul style="list-style-type: none"> ☒ Evaluate the suitability of accepting prairie dogs from off-site locations. ☒ <i>Same as B:</i> Monitor for plague.
<p><i>Objective:</i></p> <p><i>Same as B except:</i></p> <ul style="list-style-type: none"> ☒ Within 5 years, remove reintroduced native fish species from Lindsay Pond and remove pond. Relocate fish to other drainages on Refuge. <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ☒ Coordinate with and assist CDOW with species release, monitoring, and habitat maintenance. <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/>	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ☒ Within 3 years, evaluate the suitability of reintroducing the Plains sharp-tailed grouse only. <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <p><i>Strategies:</i></p> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/>

ALTERNATIVE A – No Action		ALTERNATIVE B – Wildlife, Habitat, and Public Use (Preferred Alternative)	
PUBLIC USE, EDUCATION and INTERPRETATION			
Public Access	<p><i>Objectives:</i></p> <ul style="list-style-type: none"> € Guided tours limited to 300 visitors annually. € On guided tours, provide opportunities for wildlife observation and photography. € Educate visitors about the National Wildlife Refuge System’s mission and the Refuge. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Grant access “by arrangement only” and limit to guided tours. € Develop a guideline for managing visitor access. € Distribute a survey to measure quality of visitor experience. 	Public Access	<p><i>Objectives:</i></p> <ul style="list-style-type: none"> € Within 5 years, 75% of visitors will feel welcome, safe and comfortable. € By plan’s end, visitors experience the Refuge on foot, bike and horse. € In year 1, open a trail to Lindsay Ranch. By years 5-7 open more trails and create baseline visitor data. € By plan’s end, 25% of visitors appreciate Refuge stewardship and desire to adopt conservation ethics. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Allow self-guided public access to trails and facilities. € Develop an outreach program. € Develop surveys to measure visitor experience. € Provide a seasonally staffed visitor contact station, overlooks, trails, and other facilities. Site trails (pedestrian only and multi-use trails for equestrian and bike use) to provide opportunities for wildlife observation. Allow limited off-trail use. Seasonally close some trails to minimize wildlife impacts. € Use signage, staff contact, brochures, website and other means to inform visitors about the steps to becoming a refuge and access opportunities and restrictions. € Implement volunteer programs. € Keep surrounding communities informed about Refuge events and plan implementation. € Develop an interpretive signage system and interpretive programs.
	Interpretation		<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Within 1 year, develop a fact sheet on the Refuge’s history and its natural and cultural resources. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Develop guides for staff who are leading tours.

ALTERNATIVE C – Ecological Restoration	ALTERNATIVE D – Public Use
<p><i>Objectives:</i></p> <ul style="list-style-type: none"> ∄ Guided tours limited to 1000 visitors annually. ∄ On guided tours, provide opportunities for wildlife observation and photography. ∄ 90% of visitors appreciate Refuge stewardship and desire to adopt conservation ethics. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ∄ Same as A: guided tours “by arrangement only” ∄ Develop strategy to manage public use, including a survey that measures visitor satisfaction and use patterns. ∄ Provide small scale facilities placed in previously disturbed areas that allow visitors to view key resources while minimizing impacts to wildlife. Construct a short hiking trail on existing roads to access the Lindsay Ranch overlook. 	<p><i>Objectives:</i></p> <ul style="list-style-type: none"> ∄ Within 5 years, 75% of visitors will feel welcome, safe and comfortable. ∄ Beginning in year 1, visitors can experience the Refuge in a variety of ways. ∄ By year 2, determine baseline visitor use data. ∄ By plan’s end, 50% of visitors value Refuge stewardship; 10% want to adopt conservation ethics. <p><i>Strategies:</i></p> <p>Same as B, except:</p> <ul style="list-style-type: none"> ∄ Provide a year-round staffed visitor center.
<p><i>Objective:</i></p> <ul style="list-style-type: none"> ∄ Within 1 year, develop a fact sheet Refuge’s habitat types, wildlife populations, and the Service’s restoration practices. Build on the fact sheet to create learning other materials for distribution. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ∄ Develop guides for staff who are leading tours. ∄ Work with local educators to determine topics for simple learning materials. 	<p><i>Objectives:</i></p> <ul style="list-style-type: none"> ∄ Within 2 years, develop a plan outlining interpretive facilities and programs. ∄ Within 15 years, implement the interpretive component of the Visitor Services Plan. <p><i>Strategies:</i></p> <p>Same as B, plus:</p> <ul style="list-style-type: none"> ∄ Design and build (or retrofit) a Visitor Center.

ALTERNATIVE A – No Action		ALTERNATIVE B – Wildlife, Habitat, and Public Use (Preferred Alternative)
PUBLIC USE, EDUCATION and INTERPRETATION (continued)		
Environmental Education	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ∅ No environmental education programming. 	<p><i>Objectives:</i></p> <ul style="list-style-type: none"> ∅ Within 5 years, develop an education plan for high school and college students. ∅ Within eight years, implement the education component of the Visitor Services Plan. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ∅ Partner with educational institutions and the Cold War Museum. ∅ Use electronic and other media to distribute data.
Hunting	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ∅ No hunting. 	<p><i>Objectives:</i></p> <ul style="list-style-type: none"> ∅ Within 2 years, institute a controlled youth and/or disabled person’s deer and/or elk hunting program. Following year 3, consider expanding the hunting program to the general public. ∅ Following each hunting season, assess the hunting program and adjust as appropriate. ∅ 95% percent of hunters will report no conflicts with other users, and be satisfied with their experience. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ∅ Work with the Colorado Division of Wildlife and other entities to develop a hunting component of the Visitor Services Plan and to monitor deer populations and habitat condition. ∅ Close the refuge to others during hunting weekends and encourage staff to interact one-on-one with the hunters. ∅ Develop a survey for hunters, adjacent landowners and surrounding communities.
Recreation Facilities	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ∅ No recreation facility development. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ∅ Provide portable restrooms for staff and visitor (guided tour) use. 	<p><i>Objectives:</i></p> <ul style="list-style-type: none"> ∅ Within 1 year, develop Lindsay Ranch trail. By years 5-7 build 75% of trails. By year 15, build all facilities including about 4 miles of hiking trails and about 13 miles of multi-use trails. ∅ Within 10 years, construct a seasonally staffed contact station/restrooms and maintenance facilities. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ∅ Develop a universal access trail to the Lindsay Ranch overlook and pedestrian only trails in the Rock Creek drainage. ∅ Mark trails with way finding and interpretive signs and seasonally close trails to protect wildlife habitats. ∅ Construct seasonally staffed contact station, un-staffed welcome kiosk, wildlife viewing blind, and portable restrooms at trailheads and partner to develop trail links and pedestrian crossings. Routinely evaluate facility impacts on wildlife.

ALTERNATIVE C – Ecological Restoration	ALTERNATIVE D – Public Use
<p><i>Objective:</i> Same as A.</p>	<p><i>Objectives:</i></p> <ul style="list-style-type: none"> ∅ Within 3 years, develop an education plan for junior/high school and college students. ∅ By year 15, implement the education component of the Visitor Services Plan. <p><i>Strategies:</i> Same as B except:</p> <ul style="list-style-type: none"> ∅ Construct outdoor classroom.
<p><i>Objective:</i> Same as A.</p>	<p><i>Objectives:</i> Same as B.</p> <p><i>Strategies:</i> Same as A.</p>
<p><i>Objective:</i></p> <ul style="list-style-type: none"> ∅ Within 7 years, develop all recreational facilities. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ∅ Design and construct the unpaved access, circulation, parking and trail facilities. ∅ Develop an interpretative panel at the Rock Creek overlook, and post additional trail. ∅ Provide portable restrooms at trailheads for staff and visitor use. 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ∅ Within the first 5 years, develop all trail facilities. By year 15, develop about 6 miles of hiking trails and about 15 miles of multi-use trails. ∅ By the plan’s end, enhance built trails and construct all facilities listed in plan. <p><i>Strategies:</i> Same as B, except:</p> <ul style="list-style-type: none"> ∅ Develop universal access to Rock Creek overlook. ∅ Construct year-round staffed visitor center, un-staffed welcome kiosk and wildlife viewing blind. ∅ Build outdoor classroom and added viewing facilities.

	ALTERNATIVE A – No Action	ALTERNATIVE B – Wildlife, Habitat, and Public Use (Preferred Alternative)
SAFETY		
Staff Safety	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ☒ All Refuge staff will receive orientation/training. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ☒ Develop orientation and first aid training that addresses key Refuge safety issues. ☒ Develop site-specific appendices to the Refuge Complex Safety Plan. ☒ Within 1 year, develop a health and safety plan to cover all Refuge operations ☒ Implement a goal of zero incident performance 	<p><i>Objective:</i></p> <p>-----</p> <p><i>Strategies:</i></p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p>
Visitor Safety	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ☒ Brief 100% percent of visitors on the site’s history. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ☒ Include safety related questions in the visitor survey, and adjust safety program using results. 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> ☒ Within 5 years, 75% of visitors will be aware that the Refuge is safe and open for public access before they arrive. Upon arrival, these visitors will be informed of public use opportunities and restrictions. ☒ Brief all participants in guided programs about site history. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> ☒ Provide maps and interpretive signage with restriction information at all access points/trailheads. ☒ Help potential users understand site restrictions and public use opportunities through a diversity of media. ☒ Provide information to map/ tour book publishers. ☒ Survey visitors to check success of safety program. ☒ Maintain law enforcement and ensure employees can educate visitors on safety issues. ☒ Measure program success by a reduction in visitors who violate safety rules.

ALTERNATIVE A – No Action		ALTERNATIVE B – Wildlife, Habitat, and Public Use (Preferred Alternative)
OPEN AND EFFECTIVE COMMUNICATION		
Outreach	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Disseminate information collected on the Refuge through a fact sheet mailed upon request. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Distribute fact sheet upon request. 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Within 5 years, implement 4 methods of informing the public. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Reach out to local communities and recruit participants. € Measure diversity of groups attending outreach events. € Utilize a variety of outreach communication methods. € Take part in stewardship programs and local meetings.
WORKING WITH OTHERS		
Emergency	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Within 1 year, create emergency response agreements with relevant parties. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Meet annually, or as often as needed, to coordinate fire and emergency response plans. € Coordinate all prescribed burning and other restoration practices with all nearby agencies. 	<p><i>Objective:</i></p> <p>-----</p> <p><i>Strategies:</i></p> <p>-----</p> <p>-----</p>
Conservation	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Within 1 year, develop a management agreement with the Colorado Division of Wildlife € Maintain open dialogue with adjacent entities. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Seek input of Colorado Department of Wildlife on wildlife management strategies. € Work closely with surrounding landowners, open space and natural resource entities. 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Meet annually (at minimum) with local entities to address conservation issues. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Work closely with surrounding open space and natural resource entities. € Use volunteers to help with conservation activities. € Partner to maintain wildlife corridors for wildlife that migrate seasonally to and from the Refuge

ALTERNATIVE C – Ecological Restoration	ALTERNATIVE D – Public Use
<p><i>Objective:</i></p> <p>-----></p> <p><i>Strategies:</i></p> <p>-----></p> <p>-----></p> <p>-----></p> <p>-----></p>	<p><i>Objective:</i></p> <p>-----></p> <p><i>Strategies:</i></p> <p>-----></p> <p>-----></p> <p>-----></p> <p>-----></p>
<p><i>Objective:</i></p> <p>-----></p> <p><i>Strategies:</i></p> <p>-----></p> <p>-----></p>	<p><i>Objective:</i></p> <p>-----></p> <p><i>Strategies:</i></p> <p><i>Same as A except:</i></p> <p>-----></p> <p>∅ No prescribed fire would be used.</p>
<p><i>Objective:</i></p> <p>-----></p> <p><i>Strategies:</i></p> <p>-----></p> <p>-----></p>	<p><i>Objective:</i></p> <p>-----></p> <p><i>Strategies:</i></p> <p>-----></p> <p>š Use volunteers to help with conservation and public use activities.</p> <p>-----></p>

ALTERNATIVE A – No Action		ALTERNATIVE B – Wildlife, Habitat, and Public Use (Preferred Alternative)
WORKING WITH OTHERS (continued)		
Research	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Maintain agreements with university and federal agencies for radionuclide research. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Establish criteria to evaluate research proposals. € Emphasize research with implications for the Refuge 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Make a list of habitat, wildlife and public use research needs; evaluate proposals for such research. <p><i>Strategies:</i></p> <p>-----</p> <p>-----</p> <ul style="list-style-type: none"> € Partner with other for research funding and resources
Volunteers	<p><i>Objective:</i></p> <ul style="list-style-type: none"> § No volunteer programs 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Within 3 years, create a volunteer program. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Define volunteer opportunities, and recruit volunteers from horse and bike groups to help maintain trails. € Work to establish a Refuge “Friends” group.
Staffing	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Within 2 years, fund two employees and assign collateral duties for Rocky Mountain Arsenal staff. € Fund two full-time and two seasonal employees from fire management funding. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Follow Service protocols hiring of FTEs. 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Within 2 years, fund four employees and assign collateral duties for Rocky Mountain Arsenal staff. Within 5 years add 1 additional employee. <p><i>Strategies:</i></p> <p>-----</p> <p>-----</p>

ALTERNATIVE C – Ecological Restoration		ALTERNATIVE D – Public Use	
<p><i>Objective:</i></p> <p><i>Strategies:</i></p> <p>-----></p> <p>-----></p>	<p><i>Objective:</i></p> <p><i>Strategies:</i></p> <p>-----></p> <p>-----></p>		
<p><i>Objective:</i></p> <p>Same as A.</p>	<p><i>Objective:</i></p> <p>Same as B.</p> <p><i>Strategies:</i></p> <p>Same as B.</p>		
<p><i>Objective:</i></p> <p>€ Within 2 years, fund five employees and assign collateral duties for Rocky Mountain Arsenal staff. Within 5 years, add two additional employees</p> <p>-----></p> <p><i>Strategies:</i></p> <p>-----></p>	<p><i>Objective:</i></p> <p>€ Within 2 years, fund 6 employees and assign collateral duties for Rocky Mountain Arsenal staff. Within 5 years add 2 additional employees.</p> <p>-----></p> <p><i>Strategies:</i></p> <p>-----></p>		

ALTERNATIVE A – No Action		ALTERNATIVE B – Wildlife, Habitat, and Public Use (Preferred Alternative)	
WORKING WITH OTHERS (continued)			
Operation and Management Facilities	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Develop facilities to support maintenance, conservation and administrative activities. € Maintain the existing stock fence. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Submit proposals to the Refuge Operations Needs System and Maintenance Management System. € Renovate existing vehicle search buildings to serve as a small office space and to house refuge operations. € Prepare a fire cache and install necessary water storage systems and coordinate equipment sharing with RMA staff. € Attach boundary signage to the perimeter fence and install roadside signs along the site boundary in order to announce the Refuge’s presence. 	Cultural Resource Management	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Develop a cultural resource preservation plan. € Stabilize the Lindsay Ranch barn <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Maintain an inventory of all cultural resources and. € Pursue partnerships to fund barn stabilization and fence and/or take down the Lindsay Ranch house to prevent a safety hazard. € Survey burned areas for cultural artifacts
	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Within 5 years, develop 50% of O&M facilities needed to support public use and conservation objectives. By year 10, complete all O&M facilities. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Renovate existing vehicle search buildings and provide additional administrative offices for Refuge employees within the contact station. € Construct a small maintenance/storage facility (approximately 1750 – 2250 square feet). 		<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Stabilize and interpret the Lindsay Ranch barn. <p><i>Strategies:</i></p> <ul style="list-style-type: none"> -----> -----> € Work with interested parties to interpret the story of homesteading at Rocky Flats.

ALTERNATIVE C – Ecological Restoration	ALTERNATIVE D – Public Use
<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Within 3 years, develop a satellite maintenance facility to support refuge operations. 	<p><i>Objective:</i></p> <ul style="list-style-type: none"> € Within 5 years, develop 75% of O&M facilities needed to support public use and conservation objectives. By year 10, complete all O&M facilities.
<p><i>Strategies:</i></p>	<p><i>Strategies:</i></p>
<ul style="list-style-type: none"> € Renovate existing vehicle search buildings evaluate the costs and availability of leasing nearby office space for Refuge employees. 	<ul style="list-style-type: none"> € Renovate existing vehicle search buildings and provide additional administrative offices for Refuge employees within the visitor center.
	<ul style="list-style-type: none"> € Construct a maintenance/storage facility (approximately 2500 – 3000 square feet).
<p><i>Objective:</i></p>	<p><i>Objective:</i></p>
<ul style="list-style-type: none"> € Remove Ranch structures and restore the area to native vegetation. 	<ul style="list-style-type: none"> € Stabilize and interpret Lindsay Ranch barn
<p><i>Strategies:</i></p> <ul style="list-style-type: none"> € Restore stream crossings and re-vegetate roads within the Lindsay Ranch site € Restore vegetation to pre-settlement conditions. 	<p><i>Strategies:</i></p> <p><i>Same as B.</i></p>

