

**Final**

**Environmental Assessment/  
Habitat Conservation Plan  
for the  
Issuance of an Incidental Take Permit  
Under Section 10(a)(1)(B) of the  
Endangered Species Act  
for the  
Elizabeth Cross Roads Property**

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## Title Page

**Lead Agency:** U.S. Fish and Wildlife Service, Department of Interior

**Legal Authority:** Endangered Species Act of 1973, as amended,  
Section 10(a), as implemented by  
50 CFR 17.32(b)(1) and 17.22(b)(1)

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**ENVIRONMENTAL ASSESSMENT/HABITAT CONSERVATION PLAN FOR THE  
ISSUANCE OF AN INCIDENTAL TAKE PERMIT UNDER  
SECTION 10(A)(1)(B) OF THE ENDANGERED SPECIES ACT FOR THE  
ELIZABETH CROSS ROADS PROPERTY**

**FEBRUARY 19, 2004**

**1. Introduction**

Elizabeth Cross Roads LLC, hereinafter referred to as “Applicant,” has applied to the U.S. Fish and Wildlife Service (Service) for a permit to allow the incidental take of Preble’s meadow jumping mouse (*Zapus hudsonius preblei*), a species listed as threatened under the Endangered Species Act of 1973, as amended (ESA). The incidental take would be in the form of potential disturbance to and loss of habitat potentially used by Preble’s meadow jumping mouse (Preble’s). The proposed project involves the construction of commercial development and a utility line crossing in an area known to be occupied by Preble’s. The project will include construction of buildings, landscaping, a road, a water line crossing of Running Creek, and a detention pond. Approximately 2.8 acres of Preble’s habitat will be permanently disturbed by the project. An additional 1.4 acres of Preble’s habitat will be temporarily disturbed, resulting in a total of 4.2 acres of disturbance to Preble’s habitat. The project also will include a Habitat Conservation Plan (HCP) that will enhance habitat for Preble’s through shrub planting and exclusion of grazing. The project area is located in the SE ¼ of Section 7, Township 8 South, Range 64 West, in the Town of Elizabeth, Elbert County, Colorado (Figure 1). The UTM coordinates are Zone 13: 4356800mN, 535400mE. The project area is bounded by State Highway 86 on the south, County Road 17 on the east, and Evans Park on the north, and includes a portion of the 100-year floodplain of Running Creek on the west. The project area consists of the 20-acre Elizabeth Cross Roads Property (the Property), owned by the Applicant. Figures 1 and 2 show the location of the Property.

This document provides an Environmental Assessment (EA) as documentation of National Environmental Policy Act (NEPA) compliance and an HCP as required by section 10 of the ESA in support of the Incidental Take Permit (ITP) application.

**Figure 1. Site Location**

**Figure 2. Aerial Photo of Elizabeth Cross Roads Property**

The intent of the HCP is to minimize and mitigate the potential incidental take of Preble's. No other federally listed species will be adversely affected by the proposed project, because no other federally listed species occur in the project area.

A qualified biologist will monitor the HCP and prepare an annual report on the progress of habitat improvement measures for a minimum of three growing seasons, or until success criteria are met. The annual report will be submitted to the Service by December 31 of each year. Five alternatives have been identified: 1) develop the site while minimizing impacts to Preble's to the maximum extent practicable (Preferred Alternative); 2) develop the site without avoidance of Preble's habitat; 3) develop only that portion of the site more than 300 feet from the 100-year floodplain (no impact to Preble's habitat); 4) wait for regional section 10(A)(1)(B) permit; and 5) no action.

## **2. Background**

The Property was historically used for grazing by livestock. The property to the west (Brown property) is still grazed by horses. Prior to developing the site, the Applicant commissioned a trapping survey along Running Creek on the property to determine if Preble's was present. A trapping survey in June 2000 determined that Preble's was present at the site (Western Environment and Ecology, Inc. 2000).

Because the proposed building site is within known occupied habitat for the mouse, construction at the site has been postponed until an ITP for the mouse can be obtained. The Applicant is preparing an HCP (see Section 8 of this document) as part of the application process for an ITP.

## **3. Purpose and Need**

The purpose of this EA/HCP is to evaluate the environmental impacts of the proposed action and to obtain an ITP for the Preble's meadow jumping mouse, a federally threatened species. The EA component of this report is required to document compliance with NEPA. Section 10 of the ESA requires an HCP in support of an ITP application. The intent of the HCP is to minimize and mitigate the potential incidental take of Preble's, to the maximum extent practicable, and to reduce the likelihood that the proposed project will negatively affect the survival and recovery of Preble's.

#### 4. Satisfaction of HCP Policy

The Service has adopted a “five point policy” to improve the HCP process.

Satisfaction by this HCP of the five point policy is outlined below.

1. **Biological Goals and Objectives.** The biological goals of the HCP are to minimize and mitigate incidental take of Preble’s to the greatest extent practicable, and to not appreciably reduce the likelihood of the survival and recovery of Preble’s in the wild. These goals will be achieved by enhancing and preserving Preble’s habitat at the site.
2. **Monitoring.** The HCP provides for monitoring of the mitigation area for a period of three years following completion of construction, or until the success criteria are achieved, whichever is longer.
3. **Adaptive Management.** Adaptive management will be implemented to address potential changes in circumstances at the site as part of monitoring. If annual monitoring determines that mitigation measures are not succeeding as intended, remedial measures will be implemented. Remedial measures are described in Section 8.2. Mitigation, Monitoring, and Reporting.
4. **Permit Duration.** The permit will have a term of ten years. This time period is sufficient to allow the construction of the project and to ensure the successful establishment of the mitigation sites.
5. **Public Participation.** Public comments to the Service regarding the project will be solicited through a request for public comments in a Notice of Availability published in the Federal Register.

#### 5. Description of the Affected Environment

##### 5.1. Vegetation

Pasture grasses and prairie vegetation including smooth brome (*Bromus inermis*), western wheatgrass (*Agropyron smithii*), and fringed sage (*Artemisia frigida*) cover most of the project area. Running Creek flows through the southwestern corner of the Property. Running Creek is a small stream with a bed made up of sandy and gravelly alluvial material. The riparian corridor along the creek is made up of plains cottonwood (*Populus deltoides*) with an understory of grasses such as redtop (*Agrostis alba*), timothy (*Phleum pratense*), smooth brome and quack grass (*Agropyron repens*). Leafy spurge (*Euphorbia esula*) is also a major component of the understory. Scattered patches of snowberry (*Symphoricarpos* sp.) and chokecherry (*Prunus virginiana*) occur throughout the floodplain. A few heavily browsed sandbar willows (*Salix exigua*) are also present in the riparian area. Shrub cover is less than 5 percent. The fence separating the Property

from the property to the west was not maintained before January 2003. Horses from the adjacent property often grazed on the Property before repair of the fence.

## **5.2. Wildlife**

The Property has wildlife habitat along Running Creek. Small mammal species known to occur in or near the project area based on a trapping survey include voles (*Microtus* sp.), meadow jumping mice, and deer mice (*Peromyscus maniculatus*) (Western Environment and Ecology, Inc. 2000). Based on a search of the Colorado Division of Wildlife (CDOW)'s Natural Diversity Information Source (NDIS), other mammal species that may occur at or frequent the Property include northern pocket gopher (*Thomomys talpoides*), house mouse (*Mus musculus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and mule deer (*Odocoileus hemionus*). Common bird species that are known to occur in Elbert County and that may occur at the Property include mallard (*Anas platyrhynchos*), Swainson's hawk (*Buteo swainsoni*), rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), western kingbird (*tyrannus verticalis*), eastern kingbird (*Tyrannus tyrannus*), horned lark (*Eremophila alpestris*), cliff swallow (*Petrochelidon pyrronota*), barn swallow (*Hirundo rustica*), black-billed magpie (*Pica pica*), American crow (*Corvus brachyrhynchos*), black-capped chickadee (*Poecile atricapilla*), American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), and many others (NDIS 2003). Reptiles and amphibians that have the potential to occur at the site include bull snake (*Pituophis catenifer*), plains garter snake (*Thamnophis radix*), northern leopard frog (*Rana pipiens*), plains spadefoot (*Spea bombifrons*), and tiger salamander (*Ambystoma tigrinum*) (NDIS 2003).

## **5.3. Threatened, Endangered, or Candidate Species**

Four federally listed threatened species, Preble's, bald eagle (*Haliaeetus leucocephalus*), Ute ladies'-tresses orchid (*Spiranthes diluvialis*), and the Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*), have the potential to occur in riparian areas in this part of Colorado. Two other species, the mountain plover (*Charadrius montanus*), which is proposed for listing as threatened, and the black-tailed prairie dog (*Cynomys ludovicianus*), a candidate for listing, are known to occur in upland habitats in Elbert County.

### ***5.3.1. Preble's Meadow Jumping Mouse***

Preble's is listed as threatened under the ESA. Along Colorado's Front Range, the mouse is found below 7,600 feet in elevation, generally in lowlands with medium to high moisture along permanent or intermittent streams. Preble's typically inhabits areas characterized by well-developed plains riparian vegetation with relatively undisturbed grassland and a water source in close proximity (Armstrong et al. 1997). Recent studies have suggested that Preble's may have a wider ecological tolerance than previously thought, and that the requirement for diverse vegetation and well-developed cover can be met under a variety of circumstances (Meaney et al. 1997). Radio-tracking studies conducted by CDOW have documented Preble's using upland habitat adjacent to wetlands and riparian areas (Shenk and Sivert 1999). Additional research by CDOW has suggested that habitat quality for Preble's can be predicted by the amount of shrub cover available at a site (White and Shenk 2000).

Preble's is known to occupy the riparian habitat associated with the flood plain of Running Creek, which flows through the Property. A trapping survey in June 2000 established the presence of Preble's mice along Running Creek in the northwestern corner of the Property (Western Environment and Ecology, Inc. 2000). This trapping survey captured two Preble's mice during 140 trapnights of effort. The trapping survey was discontinued after the first night, because the presence of Preble's had been established.

### ***5.3.2. Bald Eagle***

The bald eagle is a large North American bird with a historical distribution throughout most of the U.S. The bald eagle was listed as an endangered species in 1978. Population declines are attributed to habitat loss, the use of organochlorine pesticides, and mortality from shooting. Since listing, the population trend for the bald eagle has been increasing. The bald eagle was downlisted from endangered to threatened in 1995 and the Service is proposing to delist the bald eagle due to population recovery. If the bald eagle is removed from the list of threatened and endangered species, it will continue to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Bald eagles are primarily winter residents in Colorado, although nesting along the Colorado Front Range has increased in recent years. Most nesting in Colorado occurs near lakes or reservoirs or along rivers. Typical bald eagle nesting habitat consists of forests or wooded areas that contain many tall, aged, dying and dead trees (Martell 1992).

Several large cottonwood trees that could provide perching sites for bald eagles occur on and near the Property. No eagle nests or winter roost sites occur on the Property. It is unlikely that eagles would choose to nest or roost on the Property due to its location close to the Town of Elizabeth, and the surrounding residences. In addition there are no large lakes nearby to provide foraging habitat for bald eagles. The proposed project will not affect bald eagles.

### ***5.3.3. Ute Ladies'-tresses Orchid***

Ute ladies'-tresses orchid (ULTO) occurs at elevations below 6,500 feet in moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes. Occurrences of ULTO have been documented in Colorado, Wyoming, Idaho, Nevada, and Utah. Once thought to be fairly common in low elevation riparian areas in Colorado, Utah, and Nevada, currently only sixteen populations are reported to occur in Colorado with most populations occurring along the Front Range. Generally, the vegetative cover is relatively open; dense, overgrown sites are not conducive to ULTO establishment. Where the ULTO is found, soils are typically alluvial deposits of sandy, gravelly material that are saturated to within 18 inches of the surface for at least part of the growing season. Vegetation at sites where the orchid is found typically includes species that are considered facultative wetland or obligate wetland species by the U.S. Army Corps of Engineers' 1987 Wetland Delineation Manual. There are no known populations of ULTO in Elbert County.

No suitable habitat for the Ute ladies'-tresses orchid occurs in the project area. The U.S. Geographic Survey (USGS) 7½-minute quadrangle for Elizabeth shows Running Creek as intermittent; however, personal observation of the author suggests that the stream may now be perennial, because water has been observed in the creek on every site visit during many different times of year. Thus, Running Creek was historically an intermittent stream, although year round flows may be present today. Historically

intermittent streams and their floodplains are generally not considered suitable habitat for the orchid.

#### **5.3.4. Colorado Butterfly Plant**

The Colorado butterfly plant is a short-lived perennial herb found in moist areas of floodplains within a small area in southeastern Wyoming, western Nebraska, and north-central Colorado. It occurs on subirrigated, alluvial soils on level or slightly sloping floodplains and drainage bottoms at elevations of 1,524 to 1,951 meters (5,000 to 6,000 feet). Colonies are often found in low depressions or along bends in wide, active, meandering stream channels a short distance upslope of the actual channel. It commonly occurs in communities dominated by redtop and Kentucky bluegrass (*Poa pratensis*) on wetter sites and wild licorice (*Glycyrrhiza lepidota*), Flodman's thistle (*Cirsium flodmanii*), curlycup gumweed (*Grindelia squarrosa*), and smooth scouring rush (*Equisetum laevigatum*) on drier sites. These areas are usually intermediate in moisture between wet, streamside communities dominated by sedges, rushes, and cattails, and dry upland shortgrass prairie. Typical Colorado butterfly plant habitat is relatively open without dense or overgrown vegetation.

No suitable habitat for the Colorado butterfly plant will be disturbed by the project. Running Creek was historically an intermittent stream. In addition, horses graze the site. These two factors indicate that the site is not suitable habitat for the Colorado butterfly plant, and would prevent a new population of the butterfly plant from establishing at the site. The proposed project will not affect the Colorado butterfly plant because it does not occur at the site.

#### **5.3.5. Mountain Plover**

The mountain plover is proposed for listing as threatened and inhabits dry tablelands and the Colorado Plateau. This species nests primarily in shortgrass prairie sites used historically by prairie dogs, bison, and pronghorn. This species breeds from northern Montana, Wyoming, and Colorado to central New Mexico. The wintering range extends from central California to southern Arizona into northern Mexico. The mountain plover's habitat requirements generally consist of open, flat tablelands and short, intensively grazed grasslands. Typically plovers nest in areas with at least 30 percent bare ground and are often found in disturbed habitats, burned prairie, fallow agricultural

fields, and prairie dog colonies (Knopf 1996). This species avoids vegetation over six inches tall and hillsides.

The Service's mountain plover survey guidelines list several general indicators for mountain plover habitat (U.S. Fish and Wildlife Service 2002). Although the Property has a few features typical of mountain plover habitat including the presence of overgrazed pasture with some bare ground, the Property also has several negative habitat indicators such as the presence of vegetation greater than six inches in height, an absence of prairie dogs, and the presence of tall shrubs and trees along the creek. Mountain plovers are unlikely to occur at the site due to a lack of suitable habitat.

#### ***5.3.6. Black-tailed Prairie Dog***

In 1998, the Service received a petition from the National Wildlife Federation to list the black-tailed prairie dog as a threatened species under the ESA. In the February 4, 2000 Federal Register, the Service announced that listing of the black-tailed prairie dog under the ESA is warranted but precluded by other higher priority actions. The status of this species will be re-evaluated annually by the Service. Its current status as a candidate species does not protect the prairie dog under the ESA; however, future listing of the prairie dog would require consultation with the Service before disturbing a colony.

When present, prairie dogs are conspicuous due to their diurnal habits, obvious mounds and burrows, and alarm calls. No prairie dogs or their burrows occur at the Property, and the proposed project will not affect this species.

#### **5.4. Wetlands**

Steve Butler of ERO Resources delineated wetlands at the site on April 27, 2001 using methods outlined in the 1987 Wetland Delineation Manual. As of December 4, 2002, wetlands at the Property had not changed significantly. Although areas along Running Creek that have wetland soils, vegetation, and hydrology were identified, the U.S. Army Corps of Engineers (Corps) has determined that Running Creek and associated wetlands are isolated waters not subject to Corps jurisdiction. In a letter dated June 1, 2001, the Corps stated that no Corps section 404 permit is required for the project (copy attached, see Appendix A). Mr. Terry McKee of the Corps Denver Regulatory

Office reconfirmed in a telephone conversation with Steve Butler on November 20, 2002, that no Corps permit is needed for the project.

*Running Creek:* Running Creek is a stream with a bed composed of coarse sandy alluvial material with well-defined banks at the point where the proposed utility line crosses. The USGS 7½-minute quadrangle for Elizabeth shows the creek as intermittent. Running Creek and the adjacent wetlands are approximately 30 feet wide at the site of the proposed waterline crossing. Approximately 10 to 15 feet of this total is active channel while the remainder is wetlands adjacent to the creek.

*Wetlands Bordering Running Creek:* Wetlands occur on low benches along the edges of the creek. The vegetation of these areas is typically dominated by facultative wetland vegetation including reedtop, quack grass, timothy and plantain (*Plantago major*). Small patches of wetland vegetation occur within the creek and along the banks of the creek, including Nebraska sedge (*Carex nebrascensis*), bulrush (*Scirpus* sp.), and yellowcress (*Rorippa teres*).

### **5.5. Geology/Soils**

The U.S. Department of Agriculture Soil Conservation Service has mapped the soils along the creek as Ellicott loamy coarse sand. These soils are deep, somewhat excessively drained soils that occur on terraces and floodplains (SCS 1980).

### **5.6. Land Use**

The Property is currently vacant. The past use was agricultural pastureland. Surrounding land uses include a horse pasture and residence to the west, commercial development to the east, agricultural land to the south, and a park to the north. The property located to the north, called Evans Park, is owned by Elizabeth Park and Recreation District and has been developed to provide recreational facilities including ball fields, a skate park, and a concession stand.

### **5.7. Air Quality**

The Property is located in a rural portion of Elbert County that meets all relevant air quality standards.

### **5.8. Water Resources and Water Quality**

The water supply for the project will be provided by utility lines that will cross Running Creek. The project includes a storm water detention pond of the type typically required for developments. The storm water detention pond will be constructed in the area labeled “Detention Pond” in Figure 3.

### **5.9. Cultural Resources**

A records search by the Colorado Historical Society Office of Archaeology and Historic Preservation (OAHP) found one record of a prehistoric site in the general area of the Property. The study referenced was conducted by the Colorado Department of Transportation along Highway 86 (highway right-of-way) near Elizabeth in 1998. Western Cultural Resource Management, Inc. conducted an inventory of cultural and historical resources at the Property. A report documenting the results of this survey entitled *A Class III Cultural Resource Inventory of 20 Acres for Elizabeth Cross Roads Business Park, Elbert County, Colorado* has been submitted to the Service and to OAHP for review. The report documented several prehistoric sites. These sites were not recommended as eligible for listing in the National Register of Historic Places, and recommended no further work.

No existing structures will be disturbed by the project. No structures eligible for listing in the National Register of Historic Places will be affected by the proposed project.

## **6. Alternatives Considered**

The alternatives considered include: 1) develop the site while minimizing impacts to Preble’s to the maximum extent practicable (Preferred Alternative); 2) develop the site without avoidance of Preble’s habitat; 3) develop only that portion of the site more than 300 feet from the 100-year floodplain (no impact to Preble’s habitat); 4) wait for the regional section 10(a)(1)(B) permit; and 5) no action. This section describes each alternative. The environmental consequences of the alternatives are discussed in the *Environmental Consequences* section, below.

### **6.1. Alternative 1 – Proposed (Preferred) Alternative**

The proposed action is the issuance of a permit under section 10(a)(1)(B) of the ESA to allow the incidental take of Preble's during development at the site. The Preferred Alternative would allow the Applicant to construct at the site with some modifications from the original plan. The proposed project will directly affect approximately 2.8 acres of suitable habitat for Preble's. The project would not adversely affect the continued existence of Preble's on the Property due to the mitigation measures that will be implemented.

The proposed project consists of construction of a commercial development and an 8-inch PVC waterline crossing of Running Creek. Photos 1 through 8 show typical views of the project area (Appendix B). The Applicant will construct a business park in the upland area east of the creek. The waterline will consist of an 8-inch PVC pipe encased in concrete and will be installed in a 50-foot wide construction easement across the creek. The Running Creek crossing portion of the project will take approximately 2 to 3 weeks to complete. The waterline will be constructed by the Applicant on property to be deeded to the Town of Elizabeth. After completion, the town will maintain the waterline.

An HCP has been developed as part of the Preferred Alternative. The proposed HCP will allow for the incidental take of Preble's by permitting the project to be constructed in an area that may be periodically used by Preble's as foraging, feeding, breeding, and hibernation habitat. The ITP application is attached (refer to Appendix C). The conservation measures described in the HCP will compensate for impacts to Preble's habitat by restoring, enhancing, or preserving Preble's habitat at a 1.4 to 1 ratio for permanent impacts and a 1 to 1 ratio for temporary impacts. The proposed project minimizes potential effects to Preble's and its habitat while meeting the Applicant's needs.

### **6.2. Alternative 2 – Develop the Site Without Avoidance of Preble's Habitat**

This alternative consists of development of the site as originally planned before Preble's was known to be present on the site. This alternative would result in 6.25 acres of permanent and temporary disturbance of Preble's habitat. Alternative 2 was not acceptable to the Service because it would not meet the standard of avoidance of impacts to Preble's and its habitat to the maximum extent practicable.

**6.3. Alternative 3 – Develop the Portion of the Site that is More than 300 Feet from the 100-year Floodplain (No Impacts to Preble’s Habitat)**

This alternative consists of constructing a commercial development on the portion of the site that is more than 300 feet from the 100-year floodplain. Alternative 3 would still require an application for an ITP because there would be temporary impacts to Preble’s habitat from the construction of the waterline. The Applicant does not consider this alternative viable because the development of the site would not be economically feasible under this alternative.

**6.4. Alternative 4 – Wait for Regional Section 10(a)(1)(B) Permit**

This alternative involves waiting for approval of the Elbert County regional HCP and 10(a)(1)(B) Permit. Elbert County is developing a countywide HCP. The Service has not approved the regional HCP for Elbert County yet, so it cannot be implemented. It is unknown how this plan will affect future development in the Running Creek watershed, but at this time it appears that the planned Elbert County HCP will cover primarily agricultural activities and will not include the Town of Elizabeth. This alternative is not viable because the County HCP will likely not cover the Property.

**6.5. Alternative 5 – No Action Alternative**

The No Action Alternative consists of not constructing the proposed development. This alternative would avoid any incidental take of Preble’s at the site. This alternative would not allow the Applicant to use the Property as originally intended, and therefore would not be economically feasible for the Applicant. Under this alternative, no application for incidental take would be submitted.

**7. Environmental Consequences**

**7.1. Alternative 1 – Proposed (Preferred) Alternative**

**7.1.1. Vegetation**

The proposed action will result in both temporary and permanent disturbance to vegetation in the project area. Existing vegetation will be permanently removed and replaced by buildings, pavement, or landscaping in the area to be developed. The construction of the utility lines will temporarily disturb vegetation within the utility easement. Areas temporarily disturbed will be reseeded with a mix of native grassland

species. The areas disturbed and proposed mitigation measures are described in detail in the *Conservation Measures* section, below.

#### **7.1.2. Wildlife**

A few rodents or birds may be directly displaced by the proposed project. Some increased competition for nesting or foraging habitat may result. The riparian area along the creek, which provides the highest quality wildlife habitat at the site, will not be permanently disturbed by the project, and movement corridors along Running Creek will not be permanently disturbed. The conservation measures to be implemented under the HCP will minimize disturbance to habitat for Preble's. These preservation and enhancement measures will maintain open wildlife corridors along the creek and benefit other wildlife species and compensate for impacts to wildlife habitat.

#### **7.1.3. Threatened, Endangered and Candidate Species**

The most recent Service survey guidelines define Preble's habitat as riparian areas and associated uplands within 300 feet of the 100-year floodplain of a stream (U.S. Fish and Wildlife Service 1999). Based on this definition, a portion of the proposed development area is located within Preble's habitat. The proposed project could result in the incidental take of Preble's and affect Preble's that inhabit the Property by disturbing potential foraging or hibernation habitat. Habitat preservation and enhancement measures to mitigate for impacts to Preble's habitat are described below in the *Conservation Measures* section.

The bald eagle, Ute ladies'-tresses orchid, Colorado butterfly plant, mountain plover, and black tailed prairie dog will not be affected by the proposed project because none of these threatened, proposed threatened, or candidate species occur at the Property (refer to *Affected Environment* section, above).

#### **7.1.4. Wetlands**

Approximately 0.016 acre of temporary impacts to Running Creek and wetlands along the creek will occur as the result of construction of the utility line crossing. The Corps has determined that Running Creek and the associated wetlands are isolated waters and no Corps section 404 permit will be required for construction of the utility line crossing. Restoration of the Preble's habitat temporarily disturbed by the utility line

crossing also will restore wetland soils and vegetation. The disturbed area of Running Creek will be restored to original contours and the wetland areas will be planted with sandbar willow bundles (see *Section 8.1. Conservation Measures*).

#### **7.1.5. Geology/Soils**

Some disturbance to soils will occur due to grading and construction in the area developed. Soils in the utility easement will be temporarily disturbed during installation of the utility lines.

#### **7.1.6. Land Use**

The parcel is zoned for commercial development. The Town of Elizabeth has approved the proposed development. The proposed development will change the land use of the parcel from agricultural pasture to a mixture of commercial development and open space. The parcel is located near the center of Elizabeth and will not significantly change the land use in the area.

#### **7.1.7. Air Quality**

Air quality will not be significantly affected because of the small construction area and limited duration of construction. Emissions from construction-related activities would be localized and limited to short periods of time.

#### **7.1.8. Water Resources and Water Quality**

Water quality of the area should not be affected because ground-disturbing activities in and near Running Creek will be temporary. Standard best management practices (BMPs), including sediment barriers such as silt fencing or hay bales, will be used to minimize any sediment associated with construction from reaching Running Creek. BMPs are listed below in the *Conservation Measures* section of the HCP.

#### **7.1.9. Cultural Resources**

Cultural resources at the property have been documented and a survey report has been submitted to OAHP (See response letter – Appendix H). No significant resources were found during the survey. If any additional cultural or archaeological sites are discovered during construction, all work will halt until the site is evaluated by OAHP.

#### ***7.1.10. Recreation and Visual Resources***

The Property is not open to the public, so the proposed project will have no effect on recreational resources. A trail that was originally proposed to follow the eastern edge of the Running Creek floodplain has been removed from the plans in order to minimize potential impacts to Preble's habitat.

#### ***7.1.11. Indirect Effects***

No indirect effects to Preble's or its habitat are expected. Standard BMP measures will reduce the potential for effects to Running Creek in the form of increased sedimentation or runoff during construction. The current effects of grazing will be removed from the Property. An increase in predation by cats and other predators is sometimes associated with new residential development. Because the proposed development is commercial, there should be no increased predation by cats.

#### ***7.1.12. Cumulative Effects***

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur. Evans Park, the area located just north of the Property, has been developed with ball fields, parking lots, and other amenities. The property located to the west, across the creek, may be developed into a commercial development and parking lot. Other commercial and residential developments upstream are reasonably certain to occur, but the specific details of these projects are not known at this time. Other potential cumulative effects include possible future residential and commercial developments planned in the Running Creek watershed. These developments would be required to address impacts to Preble's habitat through either section 7 or section 10 of the ESA.

### **7.2. Alternative 2 – Develop the Site Without Avoidance of Preble's Habitat**

#### ***7.2.1. Vegetation***

Alternative 2 would result in both temporary and permanent disturbance to vegetation in the project area. Existing vegetation would be permanently removed and replaced by buildings, pavement, or landscaping in the area to be developed. The construction of the utility lines would temporarily disturb vegetation within the utility easement. The area of vegetation disturbed would be at least 3.45 acres greater under this alternative compared to the Preferred Alternative.

### **7.2.2. Wildlife**

A few rodents or birds would be directly displaced by the proposed project. Some increased competition for nesting or foraging habitat would result. The riparian area along the creek, which provides the highest quality wildlife habitat at the site, would not be permanently disturbed by the project. The impact on wildlife from Alternative 2 would be greater than for the Preferred Alternative.

### **7.2.3. Threatened, Endangered, and Candidate Species**

This alternative would disturb at least 3.45 more acres of Preble's habitat at the Property than the Preferred Alternative. Alternative 2 was considered non-viable because the impacts to Preble's habitat were too great and could appreciably reduce the likelihood of survival and recovery of Preble's. As with the Preferred Alternative, there would be no effect on other threatened, endangered, or candidate species.

### **7.2.4. Wetlands**

The effect on wetlands from Alternative 2 would be the same as for the Preferred Alternative. Approximately 0.016 acre of temporary impacts to Running Creek and wetlands along the creek would occur as the result of construction of the utility line crossing. The Corps has determined that Running Creek and the associated wetlands are isolated waters and no Corps section 404 permit would be required for construction of the utility line crossing. Restoration of the Preble's habitat temporarily disturbed by the utility line crossing also would restore wetland soils and vegetation. The disturbed area of Running Creek would be restored to original contours and the wetland areas will be planted with sandbar willow bundles.

### **7.2.5. Geology/Soils**

Some disturbance to soils would occur due to grading and construction in the area developed. Soils in the utility easement would be temporarily disturbed during installation of the utility line.

### **7.2.6. Land Use**

The Property is zoned for commercial development. The Town of Elizabeth has approved the proposed development. Alternative 2 would change the land use of the Property from agricultural pasture to a mixture of commercial development and open

space. The Property is located near the center of Elizabeth and Alternative 2 would not significantly change the land use in the area.

#### ***7.2.7. Air Quality***

Air quality would not be significantly affected because of the small construction area and limited duration of construction. Emissions from construction-related activities would be localized and limited to short periods of time.

#### ***7.2.8. Water Resources and Water Quality***

Under Alternative 2, water quality of the area would not be affected because ground-disturbing activities in and near Running Creek would be temporary. The same BMPs proposed for the Preferred Alternative would be used to minimize any sediment associated with construction from reaching Running Creek.

#### ***7.2.9. Cultural Resources***

Compared to the Preferred Alternative, this alternative would have similar or greater impacts on cultural and archaeological resources, if any, present at the property.

#### ***7.2.10. Recreation and Visual Resources***

The Property is not open to the public, so Alternative 2 would have no direct effect on recreational resources. Under Alternative 2, a recreational trail was originally planned along Running Creek, but was abandoned due to concerns about impacts to Preble's habitat.

#### ***7.2.11. Indirect Effects***

The indirect effect of Alternative 2 would be the same as for the Preferred Alternative. No indirect effects to Preble's or its habitat would be expected. Standard BMP measures would reduce the potential for effects to Running Creek in the form of increased sedimentation or runoff during construction. The current effects of grazing would be removed from the Property. Because the proposed development is commercial, there would be no increased predation by cats.

#### ***7.2.12. Cumulative Effects***

Cumulative effects from Alternative 2 would be the same as for the Preferred Alternative. Evans Park, the area located just north of the Property, has been developed

with ball fields, parking lots, and other amenities. Other potential cumulative effects include possible future residential and commercial developments planned in the Running Creek watershed. These developments would be required to address impacts to Preble's habitat through either section 7 or section 10 of the ESA.

**7.3. Alternative 3 – Develop the Portion of the Site that is More than 300 Feet from the 100-year Floodplain (No Impacts to Preble's Habitat)**

This alternative would disturb less than 1 acre of Preble's habitat during the construction of the utility line crossing Running Creek. Alternative 3 was considered economically non-viable for the reasons discussed under *Alternatives Considered*, above.

**7.3.1. Vegetation**

Alternative 3 would result in both temporary and permanent disturbance to vegetation in the project area. Existing vegetation would be permanently removed and replaced by buildings, pavement, or landscaping in the area to be developed. The construction of the utility line would temporarily disturb vegetation within the utility easement. The area of vegetation disturbed would be at approximately 3 acres less under this alternative compared to the Preferred Alternative.

**7.3.2. Wildlife**

A few rodents or birds would be directly displaced under Alternative 3. Some increased competition for nesting or foraging habitat would result. The riparian area along the creek, which provides the highest quality wildlife habitat at the site, would not be permanently disturbed by the project.

**7.3.3. Threatened, Endangered, and Candidate Species**

This alternative would temporarily disturb less than 1 acre of Preble's habitat at the Property, and would have no permanent effects on Preble's habitat. As with the Preferred Alternative, there would be no effect on other threatened, endangered, or candidate species.

**7.3.4. Wetlands**

The effect on wetlands from Alternative 3 would be the same as for the Preferred Alternative. Approximately 0.016 acre of temporary impacts to Running Creek and wetlands along the creek would occur as the result of construction of the utility line

crossing. The Corps has determined that Running Creek and the associated wetlands are isolated waters and no Corps section 404 permit would be required for construction of the utility line crossing. Restoration of the Preble's habitat temporarily disturbed by the utility line crossing would also restore wetland soils and vegetation. The disturbed area of Running Creek would be restored to original contours and the wetland areas will be planted with sandbar willow bundles.

#### ***7.3.5. Geology/Soils***

Some disturbance to soils would occur due to grading and construction in the area developed. Soils in the utility easement would be temporarily disturbed during installation of the utility line.

#### ***7.3.6. Land Use***

The Property is zoned for commercial development. The Town of Elizabeth has approved the proposed development. Alternative 3 would change the land use of the Property from agricultural pasture to a mixture of commercial development and open space. The Property is located near the center of Elizabeth and Alternative 3 would not significantly change the land use in the area.

#### ***7.3.7. Air Quality***

Air quality would not be significantly affected because of the small construction area and limited duration of construction. Emissions from construction-related activities would be localized and limited to short periods of time.

#### ***7.3.8. Water Resources and Water Quality***

Under Alternative 3, water quality of the area would not be affected because ground-disturbing activities in and near Running Creek would be temporary. The same BMPs proposed for the Preferred Alternative would be used to minimize any sediment associated with construction from reaching Running Creek.

#### ***7.3.9. Cultural Resources***

Compared to the Preferred Alternative, Alternative 3 would have the same or lesser effects on cultural resources. As with the other alternatives, if cultural resources were located during construction, construction would halt until the site was evaluated by OAHP.

### ***7.3.10. Recreation and Visual Resources***

The Property is not open to the public, so Alternative 3 would have no direct effect on recreational resources.

### ***7.3.11. Indirect Effects***

The indirect effect of Alternative 3 would be the same as for the Preferred Alternative. No indirect effects to Preble's or its habitat would be expected. Standard BMP measures would reduce the potential for effects to Running Creek in the form of increased sedimentation or runoff during construction. The current effects of grazing would be removed from the Property. Because the proposed development is commercial, there would be no increased predation by cats.

### ***7.3.12. Cumulative Effects***

Cumulative effects from Alternative 3 would be the same as for the Preferred Alternative. Evans Park, the area located just north of the Property, has been developed with ball fields, parking lots, and other amenities. Other potential cumulative effects include possible future residential and commercial developments planned in the Running Creek watershed. These developments would be required to address impacts to Preble's habitat through either section 7 or section 10 of the ESA.

## **7.4. Alternative 4 – Wait for Regional 10(a)(1)(B) Permit**

This alternative is not viable because the regional HCP, if implemented, is expected to primarily address agricultural activities and is not proposed to include the Town of Elizabeth. It is unknown when or if the Service would approve the regional HCP. The environmental consequences of this alternative are unknown at this time because the regional HCP has not been approved, but would probably be similar to the Preferred Alternative.

## **7.5. Alternative 5 – No Action Alternative**

This alternative would not result in any disturbance at the site or potential take of Preble's. This alternative was considered not practicable because it would not allow the Applicant to develop the Property. Without the ability to build on the Property, the Applicant would not have purchased the Property. There would be no environmental consequences from this alternative.

## **8. Habitat Conservation Plan**

### **8.1. Conservation Measures**

As part of the proposed project, an HCP has been proposed to avoid or minimize potential adverse effects of the proposed project on Preble's and its habitat. Avoidance was achieved through a reduction in the size of the proposed development. The original development plan would have affected approximately 8.12 acres of Preble's habitat (see Figure 5). Changes in the proposed size of the development reduced impacts to Preble's habitat to 4.2 acres.

Compensatory mitigation is proposed at a 1.4 to 1 ratio for permanent impacts (refer to *Mitigation for permanent disturbance*, below) and a 1 to 1 ratio for temporary impacts (refer to *Mitigation for temporary disturbance*, below). Applying these ratios, 5.3 acres of Preble's habitat will be enhanced and preserved to compensate for 4.2 acres of Preble's habitat temporarily and permanently affected by the project. For the purposes of determining mitigation requirements, vegetated areas within 300 feet of the 100-year floodplain of Running Creek will be considered Preble's habitat. The Applicant will implement the measures described in Sections 8.1.2 and 8.1.3 to assure that the proposed action does not reduce the potential for survival and recovery of Preble's in the wild.

#### ***8.1.1. Justification for Mitigation Ratios***

The 1.4 to 1 mitigation ratio for permanent impacts and 1 to 1 for temporary impacts is lower than the 1.5 to 1 ratio the Service typically expects as a minimum for similar projects; however, the unique circumstances of this project would prevent the project from being built if a higher ratio were required. A 1.5 to 1 mitigation ratio for permanent impacts to Preble's meadow jumping mouse habitat is desirable, but if a ratio close to 1.5 to 1 will allow all mitigation to be completed onsite, then a lower ratio, such as 1.4 to 1, will be acceptable. There is not enough habitat onsite to provide a higher mitigation ratio without also resulting in economic hardship to the Applicant. The Applicant has unsuccessfully attempted to secure agreements with neighboring property owners to use their land for mitigation. No other private property in the area was available for mitigation. There is also no public property in the area available for offsite mitigation. Onsite mitigation is the only way to make the project economically feasible.

In order to reduce the mitigation ratio for temporary impacts to 1 to 1 from the originally proposed ratio of 1.5 to 1, the Applicant has agreed to enhance 1.41 acres of Preble's habitat prior to construction by fencing to prevent grazing. A 1 to 1 mitigation ratio will be acceptable for temporary impacts to Preble's habitat, provided that an equivalent amount of habitat is successfully enhanced before the start of the project. The intent of this prior mitigation will be to offset temporal impacts. The baseline for success of enhancement in this area was determined by quantitatively measuring vegetative cover in December 2002. The success of enhancement was determined by quantitatively measuring again during the spring of 2003 after fencing was established in the area (see Appendix E: *Transect Methods and Data*). Impacts to habitat from the construction of the detention pond in Tract C will be treated as temporary impacts and will require mitigation at a 1 to 1 ratio.

During a series of meetings between the Applicant and the Service, it was determined that use of the above mitigation ratios was the most feasible way to allow the project to proceed without economic hardship for the Applicant and without adversely affecting Preble's or its habitat.

#### ***8.1.2. Mitigation for Permanent Disturbance***

Compensatory mitigation for permanent disturbance is proposed at a 1.4 to 1 ratio. The loss of 2.8 acres of Preble's habitat will be compensated by the enhancement and preservation of 3.72 acres of habitat. Calculation of mitigation requirements is shown in Table 1. Because research by CDOW has suggested that habitat quality for Preble's can be predicted by the amount of shrub cover available at a site (White and Shenk 2000), mitigation will include enhancement of existing riparian habitat by willow plantings. Discussions between the Applicant and the Service indicated that the Service preferred mitigation onsite or on nearby properties over mitigation at a more distant location.

Habitat areas unsuitable for willow plantings will be preserved through deed restrictions. At least 98 bundles of willow cuttings will be planted in enhancement areas. Willow planting will occur in the spring following construction. Willows must be planted early in the spring (late April to early May) to ensure that willows are still dormant. Grasses will be seeded as soon as possible after construction in either spring or fall. Figure 4 shows the planting plan that will be implemented.

**Table 1. Summary of Impacts and Mitigation**

Description of Impact or Mitigation	Area (acres)
<b>Impacts to Preble's habitat</b>	
Permanent impacts	2.8
Temporary impacts from utility crossing and detention pond in Tract C	1.4
<b>Total Impacts</b>	<b>4.2</b>
<b>Mitigation Required</b>	
Mitigation required for permanent impacts (permanent impacts x 1.4)	3.9
Mitigation required for temporary impacts (temporary impacts x 1)	1.4
<b>Total Mitigation Required</b>	<b>5.3</b>
<b>Mitigation Available</b>	
Deed restriction and eliminate grazing – Lots 6 and 7	1.4
Deed restriction and habitat enhancement – Lot 8 and Tract B	2.5
Enhancement of Tract C and restoration of utility crossing	1.4
<b>Total Mitigation Available</b>	<b>5.3</b>

**8.1.3. Mitigation for Temporary Disturbance**

Compensatory mitigation is proposed at a 1 to 1 ratio for 1.41 acres of temporary disturbance. The disturbed area of Running Creek will be restored to original contours and the wetland areas will be planted with sandbar willow bundles. The top 12 inches of topsoil from the temporarily disturbed areas will be stockpiled and restored in place after construction. Willow bundles will be planted on 8-foot centers (refer to Appendix D: Planting Specifications). Willow planting will require 15 bundles of 10 willow stakes each. All surrounding uplands that are disturbed by this construction will be reseeded with the dry grassland seed mix shown in Figure 4. Wetland areas temporarily disturbed will be replanted with a wetland grass seed mix shown in Figure 4 after willow staking. Existing native trees, such as plains cottonwood and peach-leaf willow, will be preserved to the maximum extent practicable. Figure 4 shows the planting plan that will be implemented.

**Figure 3. Impacts and Mitigation**

**Figure 4. Planting Plan and Monitoring Transects**

**Figure 5. Original Development Plan**

A detention pond will be constructed in the 0.95 acre area labeled “Detention Pond” or “Tract C” in Figures 3 and 4. The disturbance from construction of the detention pond in Tract C will be considered a temporary disturbance because the pond will be constructed in an area that is poor quality habitat, and the restored habitat will be better for Preble’s. The detention pond will be constructed to provide equal or better habitat for Preble’s compared to pre-existing conditions. The detention pond will be dry except after major storm events and will be seeded with the dry grassland seed mix after construction. To provide additional habitat for Preble’s, shrubs will be planted along the banks of the dry pond as shown in Figures 3 and 4. Planting will require approximately 200 shrubs (see Figure 4). These shrubs will be monitored as part of annual monitoring requirements and shrubs that die will be replaced as necessary to achieve a survival rate of 80 percent.

#### ***8.1.4. Best Management Practices***

Construction activities will be carried out using standard BMPs to minimize the potential for impacts to Running Creek. Standard BMPs include use of silt fencing during construction to minimize the amount of sediment from construction activities that reaches the creek. Fencing will clearly indicate the limits of work to prevent heavy equipment from entering the mitigation areas. The following additional BMPs will be implemented:

- Adjacent disturbed fill slopes will be revegetated with native plant species to protect exposed soils from erosion.
- Where temporary or permanent seeding operations are not feasible due to seasonal constraints (e.g., summer and winter months), mulch will be applied to protect soils from erosion.
- Erosion control blankets will be used on newly seeded, steep slopes to control erosion and promote the establishment of vegetation.
- Silt fences will be used to intercept sediment-laden runoff before it enters a wetland or surface water feature.
- Work areas will be limited as much as possible to minimize construction impacts on wetlands.
- Equipment refueling and staging areas shall be located in upland areas at least 100 feet from wetlands or waterways.

#### ***8.1.5. Limit timing of Construction***

Construction within Preble's habitat will occur within Preble's hibernation period (October 30 to May 1). All construction activities will be limited to daylight hours to minimize disturbance to the mouse during its active foraging time.

#### ***8.1.6. Construction Observation***

A qualified ecologist will be on site during early stages of construction of the Running Creek crossing and periodically thereafter to ensure that impact avoidance and habitat mitigation is carried out as intended.

#### ***8.1.7. Deed Restriction***

Mitigation site(s) will be placed under a conservation easement or deed restriction that restricts development and preserves the value of the mitigation site as habitat for Preble's mouse. A copy of the deed restriction is provided at Appendix G.

#### ***8.1.8. Fencing***

A fence will be constructed along the west side of the building lots to protect the preservation and enhancement areas from human use or disturbance. Plantings placed along the east (developed) side of the fence will consist of 5-gallon Buffalo juniper and 2-inch caliper Austrian pine. Approximately 41 pines will be planted about 12 to 15 feet apart with the junipers in between.

### **8.2. Maintenance, Monitoring, and Reporting**

Following construction, the compensatory mitigation site will be monitored once a year for a minimum of three years, or until the success criteria have been achieved, to document progress and to determine if remedial action is required. At the end of each growing season, a brief letter report will be submitted to the Service describing the status of any remedial work performed. Compensatory mitigation will be considered successful when:

- At least 80 percent of the number of required willow bundles is established and growing without showing signs of stress.
- At least 80 percent of the required number of riparian shrubs is established and growing without showing signs of stress.
- Grass coverage equals 80 percent of nearby undisturbed areas.

- Noxious weeds cover no more than five percent of the surface area of the mitigation and restoration areas.

During this period, if willow plantings are not becoming established, or if noxious weeds cover more than 5 percent of the restored areas, remedial action will be necessary. Remedial measures will include replacement of shrub plantings (with the same species) as necessary to achieve 80 percent survival, reseeding grasses if necessary, and additional control of noxious weeds by spraying, if necessary. The Service will approve all remedial action before it is implemented. Annual monitoring reports will be submitted to the Service to document the progress of the mitigation plan by December 31 of each year. Success criteria and proposed monitoring are described in greater detail in Appendix E.

### **8.3. Unforeseen or Extraordinary Circumstances**

Unforeseen or extraordinary circumstances are defined as “changes in circumstances surrounding an HCP that were not or could not have been anticipated to occur by the HCP participants (landowner) or the Service, that result in a substantial and adverse change in the status of a covered species.” Consistent with the Department of Interior’s “No Surprises” policy, the Service will not require the Applicant to provide additional mitigation measures in the event of unforeseen or extraordinary circumstances affecting Preble’s, not including fire or flood.

### **8.4. Foreseeable Events**

The Applicant and ERO biologists believe that no foreseeable events such as fire, major flood, or drought will affect the completion of the mitigation plan. Preble’s evolved with these threats, and such events should have no long-term effect on its survival. In the event a fire, flood or other foreseeable event damages the mitigation area, the Applicant will confer with the Service regarding the appropriate remediation or restoration of the mitigation area, including reseeding or replanting as necessary.

This HCP does not authorize incidental take for any species other than the Preble’s meadow jumping mouse. In the event any other currently listed species, or species that is listed in the future, is impacted by implementation of this HCP, the Applicant will consult with the Service and take appropriate action, as necessary, to comply with the ESA.

### **8.5. Funding Availability**

The Applicant will provide the funding necessary for the completion of the activities and conservation measures required under this HCP, and any remedial work that will be required. The Applicant will provide a letter of credit or other financial assurance from a federally chartered FDIC insured bank for an amount equal to the estimated cost of completion of the mitigation plan. A copy of the letter of credit or other financial assurance is attached at Appendix F.

### **8.6. Amendment Procedure**

A procedure will be established with which the ITP can be amended. The cumulative impacts of the amendments must not jeopardize any endangered species or other species of concern. Amendments will be evaluated based on their effects on habitat as a whole. The Service will be consulted on and concur will all proposed amendments. The types of proposed amendments and the applicable amendment procedures are described in the following sections.

#### ***8.6.1. Amendments to Development Plans***

Upon written request from the Applicant, local land use agencies (authorized under law to have jurisdiction) may approve amendments to the development plan for the property as long as the amendments do not cause additional disturbance, degradation, destruction, or take of Preble's, its habitat, or any other listed threatened or endangered species.

#### ***8.6.2. Minor Amendments to the HCP***

Minor amendments are defined as routine administrative revisions or changes to the operation and management program that do not diminish the level or means of mitigation. Minor amendments include corrections in land ownership, minor revisions to surveys, property description, monitoring, or reporting protocols, and minor changes in the boundaries of the mitigation area. Minor amendments may not cause a net loss of mitigation area, alter the effectiveness of the HCP, or alter the terms of the ITP. Upon written request of the Applicant, the Service is authorized to approve minor amendments to the HCP as long as the amendments do not conflict with the primary purpose of this HCP.

### **8.6.3. All Other Amendments**

All other amendments will be considered amendments to the ITP and will be subject to procedural requirements dictated by federal law.

### **8.7. Additional Measures and Concerns**

There are no additional measures or conditions being proposed under this HCP. An implementing agreement has not been prepared because the proposed impacts are relatively small and all of the proposed mitigation is onsite and will occur on property owned by the Applicant.

## **9. References**

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- Martell, M. 1992. Bald Eagle Winter management guidelines. U.S. Fish and Wildlife Service, Reg. 3, Minneapolis, MN.
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- U.S. Fish and Wildlife Service. 2002. Mountain Plover Survey Guidelines. January 2002.
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White, Gary C. and Tanya M. Shenk. 2000. Relationship of Preble's Meadow Jumping Mouse Densities to Vegetation Cover. Colorado Division of Wildlife Report.

**APPENDIX A:**  
**LETTER FROM U.S. ARMY CORPS OF ENGINEERS**

**APPENDIX B:  
SITE PHOTOS**

**APPENDIX C:**  
**PERMIT APPLICATION**

**APPENDIX D:  
PLANTING SPECIFICATIONS**

**APPENDIX E:**  
**TRANSECT METHODS AND DATA**

**APPENDIX F:  
LETTER OF CREDIT**

**APPENDIX G:  
COPY OF DEED RESTRICTION**

**APPENDIX H:**  
**OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION**  
**CORRESPONDENCE**