

**NORTH I-25
EIS**



information. cooperation. transportation.

WILDLIFE TECHNICAL REPORT ADDENDUM

**NORTH I-25 EIS
ADAMS, BOULDER, BROOMFIELD, DENVER, LARIMER,
AND WELD COUNTIES, COLORADO**

Revised August 2011

Prepared for—

**Colorado Department of Transportation
Region 4**

and

**Felsburg Holt & Ullevig
6300 South Syracuse Way
Suite 600
Centennial, Colorado 80111**

Prepared by—

**ERO Resources Corporation
1842 Clarkson Street
Denver, Colorado 80218
(303) 830-1188**

FHU Ref. 03-225 / 05-071 / 05-143 / 07-190

CONTENTS

	<u>Page No.</u>
Introduction.....	1
Preferred Alternative.....	1
Project Area	2
Updates to Existing Conditions	2
Federally Listed Threatened, Endangered, Candidate and Proposed Species	3
Other Federally Protected Species (Bald Eagle).....	3
Wildlife and Fish Species of Concern	4
Raptors	4
Potential Effects of the Preferred Alternative.....	5
Federally Listed Threatened, Endangered, and Candidate Species	5
Preble’s Meadow Jumping Mouse.....	5
Other Federally Protected Species (Bald Eagle).....	7
Wildlife Species of Concern	10
Black-tailed Prairie Dog	10
Swift Fox, Townsend’s Big-eared Bat, and Ferruginous Hawk	11
Western Burrowing Owl.....	11
Great Blue Heron	12
Common Gartersnake and Northern Leopard Frog	12
Common Shiner, Brassy Minnow, Iowa Darter, Stonecat, Cylindrical Papershell, and Plains Snowfly.....	13
Summary of Effects to Threatened, Endangered, and Special Status Species	14
Terrestrial Wildlife.....	14
Big Game, Other Mammals, Migratory Birds, Reptiles, and Amphibians.....	14
Wildlife Crossing Areas and Movement Corridors	14
Raptors	17
Sensitive Wildlife Habitats	17
Aquatic Resources	18
Summary of Effects to Terrestrial and Aquatic Wildlife Habitat.....	19
Mitigation and Recommendations	19
Federally Listed Threatened, Endangered, and Candidate Species	20
Preble’s Meadow Jumping Mouse.....	20
Other Federally Protected Species	21
Bald Eagle.....	21
Wildlife Species of Concern	21
Black-tailed Prairie Dog	21
Western Burrowing Owl.....	22
Great Blue Heron	22
Common Gartersnake and Northern Leopard Frog	23

State Sensitive Fish	23
Invertebrates.....	24
Terrestrial Wildlife.....	25
Big Game and Movement Corridors.....	25
Other Mammals, Reptiles, and Amphibians.....	26
Birds.....	27
Aquatic Resources	28
List of Preparers and Contacts Made.....	28
Preparers	28
Project Description and Plans Provided By.....	28
References.....	28

TABLES

	<u>Page No.</u>
Table 1. Summary of Effects to Occupied Preble’s Habitat from the Preferred Alternative.....	6
Table 2. Summary of Effects to Potential Preble’s Habitat from the Preferred Alternative.....	6
Table 3. Summary of Effects to Bald Eagle Forage Habitat as defined by CDOW from the Preferred Alternative.....	9
Table 4. Summary of Important Bald Eagle Foraging Habitat within 3 Miles of Nests and Roosts and Effects from Preferred Alternative.....	10
Table 5. Summary of Effects to Black-tailed Prairie Dog Occupied Habitat from the Preferred Alternative.....	11
Table 6. Summary of Effects to Other State Threatened, Endangered, and Species of Special Concern Potentially Affected by the Preferred Alternative.....	11
Table 7. Summary of Effects to Potential Northern Leopard Frog and Common Gartersnake Habitat from the Preferred Alternative.....	12
Table 8. Summary of Direct Effects to Habitat for State Threatened, Endangered, and Sensitive Aquatic Species from the Preferred Alternative.....	13
Table 9. Summary of Direct Effects to Threatened, Endangered, and Special Status Species Habitat under the Preferred Alternative, in Acres.....	14
Table 10. Effects to Wildlife Movement Corridors from the Preferred Alternative.....	16
Table 11. Summary of Raptor Nests within 0.5 Mile of the Project Area from the Preferred Alternative.....	17
Table 12. Summary of Effects to Sensitive Wildlife Habitat from the Preferred Alternative.....	18
Table 13. Summary of Effects to Aquatic Habitat from the Preferred Alternative.....	19
Table 14. Summary of Effects to Wildlife Habitat from the Preferred Alternative.....	19

Figures

- Figure 1. North I-25 EIS Regional Study Area
- Figure 2. North I-25 EIS Preble's Meadow Jumping Mouse Data
- Figure 3. North I-25 EIS Bald Eagle NDIS Data
- Figure 4. North I-25 EIS Wildlife Habitat – Northern Region
- Figure 5. North I-25 EIS Wildlife Habitat – Central Region
- Figure 6. North I-25 EIS Wildlife Habitat – Southern Region
- Figure 7. North I-25 EIS Wildlife Crossings and Wildlife Road Kill Data – Northern Region
- Figure 8. North I-25 EIS Wildlife Road Kill Data and Wildlife Crossings – Central Region
- Figure 9. North I-25 EIS Wildlife Road Kill Data and Wildlife Crossings – Southern Region

THIS PAGE INTENTIONALLY LEFT BLANK.

WILDLIFE TECHNICAL REPORT ADDENDUM
NORTH I-25 EIS
ADAMS, BOULDER, BROOMFIELD, DENVER,
LARIMER, AND WELD COUNTIES, COLORADO
AUGUST 2011

Introduction

The Colorado Department of Transportation (CDOT) is preparing an Environmental Impact Statement (EIS) for alternatives to improve transportation facilities in an area known as the North Interstate 25 (I-25) EIS regional study area (regional study area) ().

A Wildlife Technical Report (ERO 2008) was prepared in support of the North I-25 Draft EIS (DEIS) (CDOT 2008) to address issues related to the potential effects on wildlife of state concern, migratory birds, and other wildlife resources in the project area. The Wildlife Technical Report and DEIS addressed impacts to wildlife from two alternatives, Package A and Package B. These study results were discussed in the DEIS. Following release of the DEIS and public comments, a Preferred Alternative was developed that included components from Packages A and B. CDOT is preparing a Final EIS that will analyze the Preferred Alternative and present impacts associated with all three alternatives. This Wildlife Technical Report Addendum was prepared to analyze the effects of the Preferred Alternative to wildlife, including federal- and state-listed threatened, endangered, and sensitive species.

This report includes a brief description of the Preferred Alternative, existing conditions in the project area where conditions have changed since preparation of the Wildlife Technical Report (ERO 2008), a description of impacts of the Preferred Alternative, and proposed mitigation measures.

Preferred Alternative

The proposed project consists of highway and transit improvements in the area from Fort Collins south to Denver. The Preferred Alternative includes the following elements:

- **I-25 Highway Improvements:** One new general purpose lane in each direction of I-25 between State Highway 66 (SH 66) and State Highway 14 (SH 14), one buffer-separated Tolled Express Lane (TEL) in each direction of I-25 from the existing High Occupancy Vehicle/toll lanes at 84th Avenue to SH 14, and upgrades to 16 interchanges along the I-25 corridor.
- **I-25 Express Bus:** Express bus service with 13 stations along I-25, U.S. 34, and Harmony Road with service from Fort Collins and Greeley to downtown Denver; and from Fort Collins to Denver International Airport (DIA).
- **U.S. 85 Commuter Bus:** Commuter bus service with eight stations along U.S. 85 connecting Greeley to downtown Denver. Queue jump lanes would be constructed at intersections along U.S. 34 (12) and U.S. 85 (10). It is assumed for purposes of this analysis that queue jumps will be constructed within the footprint of the existing roadway.
- **Commuter Rail Transit:** Commuter rail service with nine stations connecting Fort Collins to Longmont and Thornton using the Burlington Northern Santa Fe (BNSF) Railroad, generally paralleling U.S. 287 and tying into the FasTracks north metro rail in Thornton, which will connect to downtown Denver. Passengers also may connect to the FasTracks northwest rail in Longmont, which will travel to Boulder.

Project Area

The project area is unchanged from the Wildlife Technical Report. The width of the project area varies depending on the species. For most wildlife species, the project area extends 0.5 mile from the center line of I-25 or from the center line of the proposed rail alignment. For bald eagles, the project area extends 1 mile from the center line of I-25 or the proposed rail alignment. For less-mobile species, such as prairie dogs and most invertebrates, the project area extends 150 feet from the center line of I-25 or the proposed rail alignment.

Updates to Existing Conditions

Impacts to wildlife from Packages A and B were analyzed in the DEIS and the Wildlife Technical Report (ERO 2008). No new surveys were prepared for this Addendum to the Wildlife Technical Report, with the exception of nesting raptor surveys. Surveys for nesting raptors, including eagles, were conducted during late winter 2009/2010 and spring 2010. Wildlife distribution data from Colorado Division of Wildlife's (CDOW) Natural Diversity Information Source (NDIS) was updated as necessary to reflect changes in the NDIS database after completion of the Wildlife

Technical Report. Preble's meadow jumping mouse (Preble's) data were updated based on trapping data available from the U.S. Fish and Wildlife Service (Service). Bald eagle nest sites and nesting activity were updated based on data available from the NDIS and Rocky Mountain Bird Observatory (RMBO).

Federally Listed Threatened, Endangered, Candidate and Proposed Species

ERO reviewed Service trapping data within the regional study area and determined that no new populations of the Preble's meadow jumping mouse (Preble's) (*Zapus hudsonius preblei*) have been identified within 1 stream mile of the project area since completion of the Wildlife Technical Report (). Final revised critical habitat for Preble's was designated on December 15, 2010 (75 FR 78429), but no critical habitat occurs in the project area (Service 2010). No other federally listed wildlife species are likely to occur within or near the project area.

The mountain plover (*Charadrius montanus*) is proposed for federal listing under the ESA and is a Colorado species of concern. In 2002, the Service proposed listing the mountain plover as a threatened species under the ESA. In 2003, the Service concluded that the threats to the mountain plover were not as significant as previously believed, and withdrew the listing proposal. In 2010, as part of a court settlement, the Service reinstated their 2002 proposal to list the mountain plover as a threatened species under the ESA. The Service will submit a final listing determination for the mountain plover by May 1, 2011.

Other Federally Protected Species (Bald Eagle)

Six bald eagle (*Haliaeetus leucocephalus*) nests are within 3 miles of the project area, as described in the Wildlife Technical Report (ERO 2008) (). These nests continue to be monitored by the RMBO Bald Eagle Watch Program (RMBO 2008, 2009, 2010).

Nesting data from each nest between 2008 and early 2010 are provided below:

- ELC Nest – A pair of adult bald eagles attempted to nest near this site in 2009 and failed before constructing the existing nest at its present location. Eagles returned in 2010 and successfully hatched two young.
- Windsor Nest – This site has been used by nesting bald eagles since 2002. The nest fledged two eaglets in 2008, and one eaglet in 2009 (RMBO 2008, 2009). The nest successfully hatched one young in 2010.

- Berthoud Nest – A pair of eagles nested at this site in 2007. Nesting success at this nest was unknown in 2008, and two eaglets were fledged in 2009 (RMBO 2008, 2009). The nest successfully hatched three young in 2010.
- Longmont/St. Vrain Nest – This nest produced one fledgling in 2008 and two fledglings in 2009 (RMBO 2008, 2009). The nest successfully hatched two young in 2010.
- Delcamino/Boulder Creek Nest – This nest has been active since 2003. This nest fledged three eaglets in 2008 and none in 2009 (RMBO 2008, 2009). This nest was not successful in 2009, but successfully hatched one young in 2010.
- Thornton Nest – This nest fledged two eaglets in 2008 and one eaglet in 2009 (RMBO 2008, 2009). The nest successfully hatched two young in 2010.

In addition to the six nest sites, a pair of bald eagles has been observed exhibiting courtship and pre-breeding behavior in the northeast section of Fossil Creek Reservoir (RMBO 2010).

Wildlife and Fish Species of Concern

No additional surveys for wildlife species of concern were conducted. Fish sampling conducted by Ficke and Myrick (2007) at the St. Vrain River and I-25 provided more details about the fish community. Fish sampling studies confirmed the occurrence of the state-listed threatened brassy minnow (*Hybognathus hankinsoni*) at this location, and also indicated that the fish species at this location are largely exotics and common natives. New information from NDIS has been incorporated into the figures and analysis contained within this report.

Raptors

In response to comments from the Service, ERO conducted surveys within 0.5 mile of the regional study area for active or potentially active raptor nests in late winter 2009 and spring 2010. Surveys were conducted from public roads prior to leaf-out to identify existing nest structures, in March to identify active great-horned owl (*Bubo virginianus*) and red-tailed hawk (*Buteo jamaicensis*) nests, and again in late April/early May to identify active Swainson's hawk (*Buteo swainsoni*) nests. Forty-nine active nest sites were identified within 0.5 mile of the various project components (, , and). The species composition of the active nests consisted of 28 red-tailed hawk, eight great horned owl,

seven Swainson's hawk, five unidentified hawks, and one osprey (*Pandion haliaetus*). Additionally, eight potentially suitable unoccupied nests were identified. This survey represents the minimum number of active nests during the year of the survey (2010). Many great-horned owls nest in tree hollows, structures, and other locations that are hard to find, and Swainson's hawks are just starting to nest in late April. It is likely that additional nests were constructed or some unoccupied nests would become active as the season progressed.

Potential Effects of the Preferred Alternative

Federally Listed Threatened, Endangered, and Candidate Species

The Preferred Alternative would result in impacts to potential Preble's habitat. No other federally listed threatened or endangered wildlife species [black-footed ferret (*Mustela nigripes*) and Mexican spotted owl (*Strix occidentalis lucida*)] would be affected by the Preferred Alternative because those species do not occur in the project area. Effects to Platte River species in Nebraska [whooping crane (*Grus americana*), least tern (*Sternula antillarum*), Eskimo curlew (*Numenius borealis*), piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), and western prairie fringed orchid (*Platanthera leucophaea*)] due to depletions are included in the Biological Assessment (ERO 2010). The Proposed Action would not result in depletions and would have no indirect effects on whooping crane, least tern, piping plover, pallid sturgeon, or western prairie fringed orchid.

Preble's Meadow Jumping Mouse

A biological assessment (BA) has been prepared for the Preferred Alternative (ERO 2011). During preparation of the BA, ERO conducted a review of available trapping data. Preble's is unlikely to occur in the majority of the project area, with the exception of the Big Thompson River at I-25 and the Little Thompson River at I-25, which are considered occupied habitat. Suitable habitat is present at the Cache la Poudre River at I-25, the Big Thompson River at the BNSF alignment, the Little Thompson River at the BNSF alignment, and the St. Vrain River at I-25 and SH 119; however, extensive trapping near these sites has not captured Preble's. These trapping surveys were conducted during the period from 1998 to 2009, and by the time the project is

constructed, these trapping surveys could be more than 20 years old. For the purposes of calculating impacts, these sites are considered potential Preble’s habitat. These sites will be reassessed and potentially surveyed beginning 2 years prior to construction. Surveys would follow the Preble’s trapping protocol approved by the Service at the time.

Preble’s is assumed to be present at the Big Thompson River at I-25 and Little Thompson River at I-25. These sites also will be reassessed and possibly surveyed for Preble’s prior to construction of the project. Summaries of effects to occupied and potential Preble’s habitat are presented in Table 1 and Table 2, respectively.

Table 1. Summary of Effects to Occupied Preble’s Habitat from the Preferred Alternative

Component	Location	Acres of Habitat
I-25 Improvements: SH 14 to SH 66	Big Thompson River at I-25	0.47
	Little Thompson River at I-25	0.25
Total		0.72

Table 2. Summary of Effects to Potential Preble’s Habitat from the Preferred Alternative

Component	Location	Acres of Habitat
I-25 Improvements: SH 1 to SH 14	No major drainages	0
I-25 Improvements: SH 14 to SH 66	Cache la Poudre River at I-25	1.16
I-25 Improvements: SH 66 to SH 7	St. Vrain River at I-25	0.05
I-25 Improvements: SH 7 to U.S. 36	Within block clearance zone	NA
Commuter Rail Transit	Big Thompson River at BNSF, Little Thompson River at BNSF	0.08
	St. Vrain River at SH 119	0.06
Total		1.35

Packages A and B would have resulted in impacts to 0.81 and 0.80 acres of occupied Preble’s habitat, respectively. The Preferred Alternative would result in less impact (0.72 acres) to occupied Preble’s habitat than either Package A or Package B. Impacts to potential Preble’s habitat were not quantified in the DEIS, but based on the reduction in impacts throughout the project area, the impacts to potential Preble’s habitat from the Preferred Alternative likely would be less than from Packages A and B.

Mountain Plover

The mountain plover is a bird of the dry tablelands and Colorado Plateau, nesting primarily in shortgrass prairie sites. The habitat requirements of this bird generally consist of open, flat tablelands and short, intensively grazed grasslands. Plovers nest in areas with extensive patches (30 percent or more) of bare ground and are often found in disturbed habitats, burned prairie, fallow agricultural fields, and prairie dog colonies (Knopf and Wunder 2006). Plovers avoid vegetation greater than 6 inches in height and hillsides or steep slopes. Known mountain plover nesting sites in Colorado are in eastern and southeastern Colorado and South Park (Kuenning and Kingery 1998). Threats to mountain plover include conversion of grassland, changing agricultural practices on wintering areas in California, energy and mineral development, loss of breeding habitat associated with burrowing mammals, human disturbance, direct and indirect effects of pesticides, and influences of annual weather variation.

Very little suitable habitat for mountain plovers occurs in the project area and there are no recent records of breeding mountain plovers in the project area (CNHP 2010; Breeding Bird Atlas Explorer 2010; COBBA II 2010). Due to the paucity of suitable habitat, high levels of human disturbance, and the lack of any recent observations, it is not likely that mountain plovers currently nest in the project area. No potential habitat for mountain plovers exists within existing highway or railroad rights-of-way due to disturbance from traffic, mowing, and maintenance activities; and the topography of side slopes designed to enhance drainage. However, some areas of new construction for the Preferred Alternative occur within the range of mountain plovers (NDIS 2010). Suitable breeding or stopover habitat for plovers within or near the study area experience high levels of human disturbance that likely preclude plover use. Human disturbance includes existing highway and railroad traffic, urbanization, and residential/commercial development.

Other Federally Protected Species (Bald Eagle)

The types of potential impacts to bald eagles were previously discussed in the Wildlife Technical Report (ERO 2008). Current data indicate that a single new active nest occurs within 0.5 mile of the project components as of the 2009/2010 breeding

season. This nest site is on the Cache la Poudre River, south of the Colorado State University Environmental Learning Center (ELC) in Fort Collins (known as the ELC nest) (). A breeding pair of bald eagles attempted to nest at this location in 2009 and failed. In 2010, the pair established a new nest 0.47 mile from the existing I-25 corridor and within 0.42 mile of the proposed highway improvements in the Preferred Alternative. The nest is on property owned by the Box Elder Water and Sanitation District, and was selected by the eagles despite extensive human activities consisting of regular train traffic on the nearby railroad tracks, aggregate mining and restoration, traffic on I-25 and local roads, recreational activities along the river, and residential development all within 1 mile of the nest.

Several other bald eagle nests are known to occur near the project area, but are more than 0.5 mile from any project components (). New breeding pairs of bald eagles could construct nests within 0.5 mile of the project area in the future, or a pair of eagles using one of the existing nests could relocate to a new nest closer to the project area. If construction activities occur within 0.5 mile of an active nest during the courting or breeding season, effects could include behavioral disturbance and potential nest abandonment.

The communal winter roost at Fossil Creek Reservoir () would not be adversely affected by the Preferred Alternative because the upgrades to the interchange at SH 392 are now part of a separate action and are no longer part of the Preferred Alternative.

The Preferred Alternative would affect the bald eagle roost on St. Vrain River. The proposed rail alignment from Longmont to Denver would run parallel to SH 119 on the north side of the highway, crossing St. Vrain River via a new bridge north of SH 119. Construction of the commuter rail would impact 0.08 acre of riparian habitat mapped as a roost, and about 4.51 acres within the 0.25-mile buffer around the roost. These impacts are the same as under Package A. Although it is unlikely that bald eagles actually roost immediately adjacent to SH 119 (a busy highway), the loss of riparian habitat in this area would reduce the amount of available roosting habitat further upstream. Bald eagle roosting areas change from year to year, and new roosting areas could become established or existing roosts could be abandoned by the time of construction; therefore,

the effects described above should be considered representative of effects that could occur when the commuter rail is constructed after 2030.

Two types of impacts to bald eagle foraging habitat were analyzed and discussed in the Wildlife Technical Report (ERO 2008)—impacts to foraging habitat (as mapped by CDOW) and important foraging habitat defined as prairie dog colonies or open water within 3 miles of a nest or communal winter night roost. Direct impacts to foraging habitat (as mapped by CDOW) under the Preferred Alternative are shown in Table 3.

Table 3. Summary of Effects to Bald Eagle Forage Habitat as defined by CDOW from the Preferred Alternative

Component	Acres of Habitat
I-25 Improvements	211.05
I-25 Express Bus Service	0
U.S. 85 Commuter Bus	4.24
Commuter Rail Transit	15.91
Total	231.20

Table 4 shows existing important bald eagle foraging habitat within 3 miles of the project area. Table 4 also shows impacts to prairie dog colonies within this 3-mile buffer under the Preferred Alternative. Important foraging habitat is defined as prairie dog colonies or open water within 3 miles of a bald eagle nest or roost.

Table 4. Summary of Important Bald Eagle Foraging Habitat within 3 Miles of Nests and Roosts and Effects from Preferred Alternative

Nest or Roost within 3 miles of project area	Prairie dog colonies within 3-mile buffer (acres) ¹	Open water within 3-mile buffer (acres)	Important foraging habitat within 3 miles (acres) ²	Preferred Alternative impacts to prairie dogs within 3-mile buffer (acres) ³
I-25 Improvements: SH 14 to SH 66: Fossil Creek Reservoir roost; ELC nest; Windsor nest	864	3,167	4,031	21.0
I-25 Improvements: SH 7 to U.S. 36: Thornton nest	1,956	424	2,381	28.6
Commuter Rail Transit: Berthoud nest; Longmont/ St. Vrain nest; Delcamino/ Boulder Creek nest; St. Vrain/Boulder Creek roosts	824	2,976	3,800	8.6
Total	3,644	6,567	10,212	58.2

¹Prairie dogs mapped by CDOW in 2002, not field verified.

²Prairie dogs (acres) + open water (acres).

³Direct impacts to prairie dogs mapped by ERO in 2006.

The Preferred Alternative would directly affect 58.2 out of 10,212 acres of important foraging habitat for bald eagles in the area. The impacts from Packages A and B would be 35.8 and 40.0 acres, respectively. Each of the three alternatives would affect less than 1 percent of the important foraging habitat in the area.

Wildlife Species of Concern

Black-tailed Prairie Dog

The types of effects to black-tailed prairie dogs are addressed in the Wildlife Technical Report (ERO 2008). Prairie dogs occurring within the project area will need to be relocated, removed, or humanely euthanized according to CDOT’s prairie dog policy (CDOT 2009). Effects to black-tailed prairie dog occupied habitat, as it exists in 2010, under the Preferred Alternative are shown in Table 5.

Table 5. Summary of Effects to Black-tailed Prairie Dog Occupied Habitat from the Preferred Alternative

Component	Acres of Habitat
I-25 Improvements	70.98
I-25 Express Bus	6.69
U.S. 85 Commuter Bus	0
Commuter Rail Transit	8.74
Total	86.41

The Preferred Alternative would directly affect 86.41 acres of occupied prairie dog habitat, which would be greater than the effects from Package A (60.32 acres) but less than the effects from Package B (97.68 acres).

Swift Fox, Townsend’s Big-eared Bat, and Ferruginous Hawk

The types of effects to other sensitive species (swift fox, Townsend’s big-eared bat, and ferruginous hawk) were addressed in the Wildlife Technical Report (ERO 2008). Direct effects to these species under the Preferred Alternative are summarized in Table 6 (**Error! Reference source not found., Error! Reference source not found., and Error! Reference source not found.**). Impacts were evaluated qualitatively and no discernable difference was found between the Preferred Alternative and Packages A and B.

Table 6. Summary of Effects to Other State Threatened, Endangered, and Species of Special Concern Potentially Affected by the Preferred Alternative

Common Name	Type of Effect	Relative Magnitude of Effect
Swift fox	Potential loss of foraging habitat and displacement during and after construction.	Minimal – disturbed areas would be low quality habitat for this species, on fringes of occupied range.
Townsend’s big-eared bat	Potential loss of foraging habitat and displacement during and after construction.	Minimal – no caves or mines that could provide roosting or hibernation sites would be affected.
Ferruginous hawk	Potential loss of foraging habitat.	Minimal – no nesting habitat would be disturbed.

Western Burrowing Owl

The Preferred Alternative would affect 86.41 acres of prairie dog colonies, which could indirectly affect burrowing owls because prairie dog colonies provide suitable nesting habitat for this species (**Error! Reference source not found., Error! Reference**

source not found., and **Error! Reference source not found.**). This effect would be greater than the effects from Package A (60.32 acres) but less than the effects from Package B (97.68 acres). Burrowing owls have been known to nest in the prairie dog colony near the proposed express bus station at U.S. 34 and SH 257 (**Error! Reference source not found.**). No other burrowing owls are known to nest within the project area. No work will occur in prairie dog towns while burrowing owls are present, thereby avoiding direct effects to burrowing owls. Work will either occur outside the time the owls are present in Colorado from March 15 to October 31 (CDOW 2008), or prairie dog towns will be surveyed prior to construction to confirm that owls are not present.

Great Blue Heron

The types of effects to great blue herons were addressed in the Wildlife Technical Report (ERO 2008). No heron nesting areas (rookeries) would be directly impacted by the Preferred Alternative, and no buffer areas surrounding three active rookeries would be impacted (, , and). No new impacts would occur within the 0.31-mile (500-meter) buffer around the great blue heron nesting area at Ish Reservoir, a new great blue heron nesting area northeast of SH 7 and Colorado Boulevard; and a new nesting area south of the ELC, east of Fort Collins. No impacts are expected to occur within the buffers around other great blue heron nesting areas.

Common Gartersnake and Northern Leopard Frog

The types of effects to the common gartersnake and northern leopard frog were addressed in the Wildlife Technical Report (ERO 2008). Impacts to habitat for common gartersnakes and northern leopard frogs under the Preferred Alternative are shown in Table 7.

Table 7. Summary of Effects to Potential Northern Leopard Frog and Common Gartersnake Habitat from the Preferred Alternative

Component	Acres of Habitat
I-25 Improvements	13.40
I-25 Express Bus	0.71
U.S. 85 Commuter Bus	0
Commuter Rail Transit	3.38
Total	17.49

The Preferred Alternative would directly impact 17.49 acres of habitat for the common gartersnake and northern leopard frog. This effect would be less than the effects from Package A (20.14 acres) and Package B (21.28 acres).

Common Shiner, Brassy Minnow, Iowa Darter, Stonecat, Cylindrical Papershell, and Plains Snowfly

The types of effects to habitat for state threatened, endangered, and sensitive aquatic species such as the common shiner, brassy minnow, Iowa darter, stonecat, cylindrical papershell, and plains snowfly (*Mesocapnia frisoni*) were addressed in the Wildlife Technical Report (ERO 2008). Table 8 summarizes the direct effects to habitat for state-listed threatened, endangered, and sensitive aquatic species from the Preferred Alternative.

Table 8. Summary of Direct Effects to Habitat for State Threatened, Endangered, and Sensitive Aquatic Species from the Preferred Alternative

Component	Aquatic Habitat (Species Potentially Affected)	Activity	Acres Directly Affected
I-25 Improvements: SH 14 to SH 66	Cache la Poudre River (brassy minnow and Iowa darter)	Replace existing bridges at I-25 northbound, I-25 southbound, and Harmony Road	0.15
	Big Thompson River (Iowa darter)	Replace existing bridges at I-25 northbound, I-25 southbound, and I-25 service road	0.14
I-25 Improvements: SH 60 to SH 7	St. Vrain River (common shiner, brassy minnow, Iowa darter, and stonecat)	No action at existing bridges at I-25	0
Commuter Rail Transit	Big Thompson River (Iowa darter)	Construct new tracks and crossing adjacent to existing crossing	0.03
	St. Vrain River (common shiner, brassy minnow, Iowa darter, and stonecat)	Construct new rail alignment and bridge on the north side of SH 119	0.06
Total			0.38

The Preferred Alternative would directly affect 0.38 acre of habitat for state threatened, endangered, and sensitive aquatic species. Impacts would be the same for Package A (0.38 acre) and slightly less for Package B (0.35 acre).

Summary of Effects to Threatened, Endangered, and Special Status Species

As described above, the Preferred Alternative would affect several threatened, endangered, and special status species. Table 9 summarizes the direct effects to threatened, endangered, and special status species habitat under the Preferred Alternative.

Table 9. Summary of Direct Effects to Threatened, Endangered, and Special Status Species Habitat under the Preferred Alternative, in Acres

Component	Preble's Occupied	Bald Eagle Forage	Bald Eagle Roosts	Prairie Dogs	Northern Leopard Frog and Common Gartersnake	Sensitive Fish Species
I-25 Improvements	0.72	211.05	0	70.98	13.40	0.29
I-25 Express Bus	0	0	0	6.69	0.71	0
U.S. 85 Commuter Bus	0	4.24	0	0	0	0
Commuter Rail Transit	0	15.91	5.05	8.74	3.38	0.09
Total	0.72	231.20	5.05	86.41	17.49	0.38

Terrestrial Wildlife

Big Game, Other Mammals, Migratory Birds, Reptiles, and Amphibians

Effects to big game, other mammals, migratory birds, reptiles, and amphibians are described in the Wildlife Technical Report (ERO 2008). These effects were generally qualitative and are unchanged under the Preferred Alternative. The most substantial effects to these species would result from habitat fragmentation. Potential impacts to wildlife crossing areas and movement corridors are described in more detail below under *Wildlife Crossing Areas and Movement Corridors*.

Wildlife Crossing Areas and Movement Corridors

Existing wildlife crossings based on geographic features, such as streams and ridgelines, NDIS, and road kill data, are presented in , , and . The types of effects to wildlife crossing areas and movement corridors were addressed in the Wildlife Technical Report (ERO 2008). As described in the Wildlife Technical Report, construction of fences and retaining walls can create a barrier to movements by wildlife. The DEIS and Wildlife Technical Report describes construction of a chain link fence along the entire

length of the commuter rail alignment for safety purposes. Construction of a chain link fence under current conditions would create a substantial barrier to wildlife movements. Fencing decisions for the commuter rail alignment would be made based on conditions at the time of construction (estimated to be 50 to 60 years in the future). Wildlife-friendly fences would be used, as appropriate, at the time of construction to reduce impacts to wildlife movements. Table 10 summarizes effects to wildlife movement corridors from the Preferred Alternative.

Effects to wildlife movement corridors were assessed qualitatively and are generally the same as under Package A, except that impacts would be greatly reduced by incorporating wildlife friendly fencing wherever possible.

Table 10. Effects to Wildlife Movement Corridors from the Preferred Alternative

Component	Wildlife Crossing Areas	Existing Structures	Effects on Wildlife Movement Corridors
I-25 Improvements: SH 1 to SH 14	Not applicable	Not applicable	No additional lanes are proposed in this area, and long-term effects to wildlife movements would be minor.
I-25 Improvements: SH 14 to SH 66	Cache la Poudre River at I-25, Big Thompson River at I-25, Little Thompson River at I-25, I-25 between Little Thompson River and St. Vrain Creek	Multiple-span bridges northbound and southbound. The existing structures at Cache la Poudre, Big Thompson, and Little Thompson rivers provide good passage for wildlife. Concrete box culvert at North Creek is adequate for small- and medium sized mammals.	Construction of additional lanes would increase existing fragmentation of habitat by I-25. Bridges at the Cache la Poudre, Big Thompson, and Little Thompson rivers would be replaced with larger structures that would benefit wildlife over the long term by creating wider movement corridors and increasing the overall perception of openness by wildlife.
I-25 Improvements: SH 66 to SH 7	St. Vrain Creek at I-25, I-25 west of Firestone and Frederick, Little Dry Creek at I-25	The existing multiple-span bridge at St. Vrain Creek is adequately sized for deer and other wildlife. No major bridges or culverts are present at I-25 west of Firestone and Frederick. Concrete box culvert at Little Dry Creek is adequate for small- and medium sized mammals.	Construction of additional lanes would increase existing fragmentation of habitat by I-25. A bridge at Little Dry Creek would be replaced with a wider structure, and would continue to provide movement corridors beneath the highway. The bridge over St. Vrain River would not be modified, and would continue to provide an underpass for wildlife.
I-25 Improvements: SH 7 to U.S. 36	Big Dry Creek at I-25	Multiple-span bridge is adequately sized for deer and other wildlife.	Construction of additional lanes would increase existing fragmentation of habitat by I-25. The bridge at Big Dry Creek would be replaced with a wider structure, and would continue to provide a movement corridor beneath the highway.
I-25 Express Bus	Not applicable	Not applicable	No additional lanes are proposed and no long-term effects to wildlife movements are expected.
U.S. 85 Commuter Bus	Not applicable	Not applicable	No additional lanes are proposed and long-term effects to wildlife movements would be minor.
Commuter Rail Transit	Fossil Creek, Big Thompson River, Little Thompson River, Ish Reservoir area, St. Vrain Creek at SH 119, commuter rail alignment west of Firestone and Frederick, Little Dry Creek	Single span bridge at Fossil Creek and multiple span bridges at Big Thompson and Little Thompson rivers provide good passage for wildlife. The multiple-span bridge over the St. Vrain River at SH 119 is undersized for deer due to low vertical clearance but is large enough for small- and medium- sized mammals. No major structures are present at the commuter rail alignment west of Firestone and Frederick. No existing rail alignment is present at Little Dry Creek, so no movement barriers exist.	Construction of new tracks, fences, and retaining walls would create barriers to east-west wildlife movements. Use of wildlife friendly fences wherever possible would mitigate this impact. Culverts and bridges, including those at Fossil Creek and the Big Thompson and Little Thompson rivers and along SH 119 at St Vrain River and the Little Dry Creek crossing of the rail alignment would become more important for wildlife crossings.

Raptors

The types of effects to raptors were addressed in the Wildlife Technical Report (ERO 2008). Based on comments received on the DEIS, nesting raptor surveys were updated in 2010 using a 0.5-mile buffer around nests instead of the 0.25-mile buffer used during surveys for the DEIS. Table 11 summarizes the number of raptor nests within 0.5 mile of the project area.

Table 11. Summary of Raptor Nests within 0.5 Mile of the Project Area from the Preferred Alternative

Component	Number of Nests
I-25 Improvements: SH 1 to SH 14	4
I-25 Improvements: SH 14 to SH 66	22
I-25 Improvements: SH 66 to SH 7	13
I-25 Improvements: SH 7 to U.S. 36	7
I-25 Express Bus*	0
U.S. 85 Commuter Bus*	1
Commuter Rail Transit*	10
Total	57

*Where a raptor nest was within 0.5 mile of both a transit and highway component, the effect was assigned to the highway component.

The actual number of nests is likely to be different at the time of construction, but these numbers are representative of the effects that could occur. The number of nests within 0.5 mile of Package A is 49 and the number of nests within 0.5 mile of Package B is 43. There are more nests within 0.5 mile of the Preferred Alternative; however, it is important to consider raptor nests within the context of existing conditions. Forty-six of the 57 recorded nests occur within 0.5 mile of I-25 and existing levels of disturbance from road construction and traffic. The raptors using these nests are acclimated to high levels of existing disturbance.

Sensitive Wildlife Habitats

The types of impacts to sensitive wildlife habitats are described in the Wildlife Technical Report (ERO 2008). Table 12 summarizes effects to sensitive wildlife habitat from the Preferred Alternative.

Table 12. Summary of Effects to Sensitive Wildlife Habitat from the Preferred Alternative

Component	Affected Sensitive Habitat Area
I-25 Improvements: SH 1 to SH 14	No additional lanes are proposed under this component, and long-term effects to sensitive wildlife habitat would be minor.
I-25 Improvements: SH 14 to SH 66	Riparian and wetland habitat at the Cache la Poudre River (1.16 acres), Big Thompson River (0.47 acre), and Little Thompson River (0.25 acre) would be affected by highway widening and bridge replacement under this component.
I-25 Improvements: SH 66 to SH 7	Sensitive riparian habitat also occurs along St. Vrain River near I-25, but no changes are proposed to the I-25 bridge over the St. Vrain River.
I-25 Improvements: SH 7 to U.S. 36	No effects to sensitive habitat are expected under this component.
I-25 Express Bus	No additional lanes are proposed under this component, and no long-term effects to sensitive wildlife habitat are expected.
I.U.S. 85 Commuter Bus	No additional lanes are proposed under this component, and no long-term effects to sensitive wildlife habitat are expected.
Commuter Rail Transit	No direct impacts to riparian and wetland habitat at the Big Thompson River are expected from the rail alignment and bridge replacement. Riparian habitat at the Little Thompson River would not be directly affected by the rail alignment and bridge replacement; however, indirect effects to the Potential Conservation Area designated by CNHP could result. The wildlife crossing area near Ish Reservoir also could be affected by fences and retaining walls, which would create a barrier to wildlife movement. Riparian and wetland habitat at the St. Vrain River (0.06 acre) would be affected by construction of a new bridge crossing.

The Preferred Alternative would directly affect 1.94 acres of sensitive wildlife habitat. Impacts would be less than impacts from Package A (2.01 acres) and Package B (2.35 acres).

Aquatic Resources

The types of effects to aquatic resources are described in the Wildlife Technical Report (ERO 2008). The effects to aquatic habitat from the Preferred Alternative are summarized in (Table 13).

Table 13. Summary of Effects to Aquatic Habitat from the Preferred Alternative

Component	Location	Affected Habitat (acres)
I-25 Improvements	Cache la Poudre River, Big Thompson River, Little Thompson River, St. Vrain River, Big Dry Creek, and various ditches and roadside ponds	1.54
I-25 Express Bus		0
U.S. 85 Commuter Bus		0
Commuter Rail Transit		0
Total		1.54

The Preferred Alternative would directly affect 1.54 acres of aquatic habitat. Impacts would be less than impacts from Package A (1.82 acres) and Package B (2.25 acres).

Summary of Effects to Terrestrial and Aquatic Wildlife Habitat

As described above, the Preferred Alternative would affect both terrestrial and aquatic habitat. Impacts to wildlife habitat from the Preferred Alternative are summarized in Table 14.

Table 14. Summary of Effects to Wildlife Habitat from the Preferred Alternative

Component	Number of Raptor Nests	Number of Movement Corridors	Sensitive Wildlife Habitat (acres)	Aquatic Habitat (acres)
I-25 Improvements	46	4	1.88	1.54
I-25 Express Bus	0	0	0	0
U.S. 85 Commuter Bus	1	0	0	0
Commuter Rail Transit	10	6	0.06	0
Total	57	10	1.94	1.54

Mitigation and Recommendations

This section describes recommendations for reducing or mitigating proposed project impacts to wildlife, and presents possible mitigation opportunities. Whenever possible, mitigation measures to avoid or reduce impacts to wildlife will be incorporated into the proposed project, including avoiding sensitive habitat, using best management practices (BMPs) to control erosion and drainage improvements, and promptly revegetating disturbed areas.

The proposed project area falls within the Shortgrass Prairie Initiative, an agreement between the CDOT, CDOW, Federal Highway Administration (FHWA), and Service. The Shortgrass Prairie Initiative included a BA and mitigation measures for FHWA funding of CDOT's routine maintenance and upgrade of existing transportation corridors in eastern Colorado for a 20-year period beginning in 2003. The BA includes all of I-25 within Colorado. A Biological Opinion (BO) was issued by the Service, which covers the bald eagle and 29 species of concern (Service 2003). The BO includes a list of measures to minimize effects to the bald eagle, including protecting off-site shortgrass prairie habitat and implementation of on-site BMPs. The BO also includes proposed conservation measures for sensitive nonlisted species such as the black-tailed prairie dog; burrowing owl; native fish and mussels (including brassy minnow, common shiner, plains minnow, and cylindrical papershell); and northern leopard frog. The BO lists BMPs for each of these species, and provides that if any of these species are listed, the appropriate protective measures will be incorporated into the BO. The Shortgrass Prairie Initiative does not cover Preble's (Service 2003).

Specific mitigation recommendations, in addition to those in the Shortgrass Prairie Initiative, are described below.

Federally Listed Threatened, Endangered, and Candidate Species

Preble's Meadow Jumping Mouse

- Mitigation measures for occupied Preble's habitat may be required as part of Section 7 consultation with the Service for impacts to federally listed threatened and endangered species. Mitigation measures will focus on avoidance and minimization of impacts during construction. Avoidance and minimization measures include limiting the timing of construction to Preble's inactive season (November through April) or use of visible barriers to limit the area of construction.
- If culverts in Preble's habitat are replaced or upgraded, the new culverts could incorporate ledges and other measures, such as those described in Clevenger and Huijser (2009), to facilitate small mammal passage.
- Where impacts are unavoidable, compensatory mitigation will be provided through replacement with suitable Preble's habitat. Mitigation measures for Preble's could be combined with wetland mitigation. Wetland mitigation measures also may replace any impacts to suitable unoccupied Preble's habitat.

Other Federally Protected Species

Bald Eagle

- A raptor nest survey (to include bald eagles) will be conducted prior to construction to identify bald eagle nests near the project area. If an active bald eagle nest is found within 0.5 mile of the project area, the buffers and seasonal restrictions recommended by CDOW (no human encroachment within 0.5 mile of the nest from November 15 to July 31) will be established during construction to avoid nest abandonment.
- No construction will occur within 0.25 mile of active nocturnal roosts between November 15 and March 15. If perch or roost trees greater than 12 inches diameter at breast height are removed during construction, they will be replaced at a 2:1 ratio with cottonwood trees.
- All overhead lighting at the intersection of I-25 and State Highway 392 near Fossil Creek Reservoir will incorporate the latest technology at the time of construction to control light leakage and direct lighting away from eagles roosting or nesting at the reservoir.
- Mitigation for wetland impacts also will provide mitigation for impacts to riparian habitats used for foraging by bald eagles.

Wildlife Species of Concern

Black-tailed Prairie Dog

Prairie dog distribution in the project area is likely to change between the time field surveys were conducted and the time construction occurs; therefore, prairie dog colonies would likely need to be resurveyed prior to construction.

In areas where avoidance of prairie dogs is not possible, CDOT will follow its guidelines for mitigating impacts. CDOT's prairie dog guidelines include:

- CDOT projects will be designed and constructed to avoid and minimize impacts to prairie dog colonies greater than 2 acres.
- If a colony is less than 2 acres, but has the potential to expand into areas that are currently inactive (i.e., not constrained), the available and accessible habitat will be the determining size of the area to be considered.
- In order to foster a heightened sense of CDOT's ecological stewardship by the public, projects involving prairie dog towns of less than 2 acres will be designed and constructed to avoid and minimize impacts, which may include the relocation of prairie dogs, so long as doing so will not increase the impacts to other resources (e.g., wetlands, historical properties, environmental justice issues, and archeological sites) and is not cost prohibitive.

- The area of prairie dog towns that will be affected by a project will be calculated before construction begins.
- Relocation efforts for prairie dog towns greater than 2 acres shall be conducted in accordance with C.R.S. § 35-7-203, as well as any other applicable laws or regulations.
- If a relocation site cannot be located for towns larger than 2 acres, the prairie dogs will be captured and donated to raptor rehabilitation facilities, or turned over to the Service for the black-footed ferret reintroduction program.
- At no time will CDOT authorize earth-moving activities that result in burying live prairie dogs. If needed, humane techniques for killing prairie dogs within a town of less than 2 acres (recommended humane techniques) will be obtained from CDOW.
- Coordination with the CDOW District Wildlife Manager responsible for the area the project is in will be initiated before any manipulation of prairie dogs or their colonies begins.

Western Burrowing Owl

- Burrowing owl surveys will be conducted prior to any work in prairie dog colonies between March 15 and October 31, when burrowing owls are present in Colorado (CDOW 2007). If burrowing owls are present, prairie dog removal will be scheduled to occur outside of this time period.
- If burrowing owls are found within the construction footprint during preconstruction surveys, nests will be left undisturbed and additional avoidance measures will be developed in coordination with CDOW. No human encroachment or disturbance will occur within 150 feet of a known nesting site until after November 1, or until it can be confirmed the owls have left the prairie dog town (CDOW 2007).
- Direct impacts to burrowing owls will be avoided by covering or destroying prairie dog burrows prior to construction (prior to March 15) in order to prevent burrowing owls from nesting in the construction area. Prairie dogs will be humanely removed following CDOT's prairie dog policy prior to destruction of burrows.

Great Blue Heron

Direct impacts to nesting great blue herons will be avoided by conducting work outside the CDOW-recommended 500-meter (0.31-mile) buffer from nest sites (NDIS 2006). Impacts within this buffer will be limited during the great blue heron nesting season, which occurs from mid-March through July.

Common Gartersnake and Northern Leopard Frog

- Mitigation measures for wetlands and Preble's, including wetland replacement and riparian enhancement, also will mitigate for impacts to the common gartersnake and northern leopard frog.
- Replacement of culverts with larger culverts or free-spanning bridges also will mitigate for potential impacts to the common gartersnake and northern leopard frog.

State Sensitive Fish

The project will comply with Senate Bill (SB) 40, which requires any agency of the State of Colorado to obtain wildlife certification from CDOW when the agency plans construction in any stream or its bank or tributaries. An application for SB 40 wildlife certification will be submitted to CDOW. CDOW will review the plans to ensure the project adequately protects fish and wildlife resources, and will provide recommendations if the proposed project will adversely affect a stream.

To offset temporary impacts to aquatic species from habitat disturbance, aquatic habitats will be restored after construction activities have ceased. The following design measures will be implemented to mitigate potential impacts to aquatic species, including native fish:

To replace or restore some of the aquatic habitat function along the St. Vrain River, some simple habitat enhancement measures could be implemented. A drop structure and fishway constructed east of the I-25 Bridge on the St. Vrain River can accommodate fish of all sizes, but the lower pool below the fishway harbors nonnative predators such as largemouth bass and white crappie (Ficke and Myrick 2007). Elimination of the lower pool should remedy the problem without compromising the function of the structure (Ficke and Myrick 2007). Additionally, a large eddy on the northern side of the lower pool likely disorients fish as they enter the fishway. Disoriented fish can be delayed or prevented from gaining entrance to the structure. Extension and/or enlargement of existing boulder wing walls may reduce or eliminate the eddy (Ficke and Myrick 2007).

Project wide Mitigation

- Ripples and pools will be maintained and/or created.
- Natural stream bottoms will be maintained where possible.

- Culverts will be partially buried, and the bottom will be covered with gravel/sand and have a low gradient.
- Culverts will be replaced with one of equal or greater size.
- Culverts will not have grates, impact dissipaters, or any other features that will impede fish movement.
- To avoid erosion-induced siltation and sedimentation, sediment- and erosion-control BMPs will be implemented during each phase of construction. Seeding, in combination with mulch and mulch tackifier or blanket, will occur upon completion of all slope grading within the limits set forth in Section 208 of CDOT specifications.
- Erosion-control blankets will be “wildlife friendly,” consisting of 100 percent biodegradable materials.
- Access points to streams during construction will be limited to minimize degradation of the banks.
- No new fish passage barriers will be created.
- Existing drop structures that create a barrier to fish movements will be removed or redesigned where possible. An example is the drop structure east of the frontage road at I-25 and the St. Vrain River, which is planned to be modified to facilitate fish passage as part of this project.

Site-specific Mitigation for the St Vrain River

- Eliminate the lower pool below the fishway.
- Extend and/or enlarge existing boulder wing walls below the fishway to reduce or eliminate eddies.

CDOT’s water quality BMPs will be applied, and include the installation of mechanisms to collect, contain, and/or treat roadway runoff. Mitigation measures designed to offset impacts to wetlands and Preble’s, including habitat replacement/enhancement and the replacement of existing culverts with larger culverts and/or free-spanning bridges, also will improve fish habitat.

Invertebrates

The mitigation measures for state-sensitive fish species described above, including SB 40 certification and water quality BMPs, also benefit sensitive aquatic invertebrates such as the cylindrical papershell and plains snowfly.

Terrestrial Wildlife

This section describes recommendations for reducing or mitigating proposed project impacts to wildlife, and presents possible mitigation opportunities. Whenever possible, mitigation measures to avoid or reduce impacts to wildlife will be incorporated into the proposed project, including avoiding sensitive habitat, using retaining walls to avoid or minimize impacts, using BMPs to control erosion and drainage improvements, and promptly revegetating disturbed areas. The following overall mitigation measures apply to all project components.

Big Game and Movement Corridors

Impacts to big game will be minimized where feasible through construction of crossing structures that are designed to maintain wildlife movement corridors. In areas identified as important movement corridors, the following measures are recommended. These mitigation measures may not be feasible at all wildlife crossing areas due to cost or engineering issues. As described above in Table 10, most existing bridges across I-25 or the commuter rail alignment in the project area are adequately sized to allow wildlife crossing under current conditions, and would continue to be adequately sized for wildlife under the Preferred Alternative.

The existing wildlife passage under SH 119 at St. Vrain Creek is undersized for deer due to a low vertical clearance. A commuter rail bridge would be constructed adjacent to SH 119 under the Preferred Alternative. There are no current plans to improve the SH 119 crossing for wildlife, but if the SH 119 crossing is improved in the future, the commuter rail crossing should be designed to allow passage of deer and other wildlife.

There are currently no barriers to wildlife movement at Little Dry Creek and the commuter rail alignment because there is no existing rail line in this area. When the commuter rail line is constructed at Little Dry Creek, it should be constructed to allow adequate passage for wildlife.

The wildlife corridor near Ish Reservoir does not occur along a drainage, and construction of a bridge or culvert at this location will be more difficult than at other wildlife corridors.

To maximize the use of movement corridors by wildlife, bridge spans and culverts should have the following features:

- A minimum clearance of 13 feet and width of 23 feet for deer (Clevenger and Huijser 2009) will be used. Crossing structures sized for deer will be adequate for most common wildlife. The recommended minimum culvert diameter is 48 inches for medium-sized carnivores and 36 inches for small carnivores (Ruediger and DiGiorgio 2007).
- A minimum “openness ratio” of 0.75 will be used. The “openness ratio” is defined as the height of the structure multiplied by the structure width and divided by the structure length, measured in meters. A minimum openness ratio of 2.0 is recommended by some researchers (Ruediger and DiGiorgio 2007).
- Shrubs and vegetative cover will be placed at bridge underpass openings to attract wildlife and provide a “funnel effect.”
- Structures that periodically convey water, ledges, shelves, or other measures, such as those described in Clevenger and Huijser (2009), will be provided to facilitate passage alternatives during high water.
- To avoid human disturbance to wildlife, trails will not be placed near wildlife crossing structures, if possible.
- Structures that include a substrate composition to accommodate wildlife movement (e.g., gravel or native soil).

Other recommended design elements include:

- Avoid the placement of lighting near the crossing structures (where lighting is required, lights should be directed downward and covered to minimize light spill-over).
- Avoid attracting wildlife to the right-of-way by keeping roadside vegetation height to a minimum.
- Mitigate for traffic noise.
- Use wildlife-friendly fences as much as feasibly possible. Wildlife friendly fencing should follow the recommendations in *Fencing with Wildlife in Mind*, a CDOW publication (Hanophy 2009).

Other Mammals, Reptiles, and Amphibians

Many other wildlife species, such as small and medium-sized mammals, reptiles, and amphibians use the same migration corridors used by larger animals, and will benefit from the mitigation measures for wildlife movement corridors described above. Effects

to other wildlife from impacts to grasslands will be mitigated by implementing the mitigation measures described for vegetation.

Other sensitive wildlife habitat areas are generally located along major drainageways. Mitigation measures for impacts to vegetation, wetlands, and Preble's habitat also will benefit these areas.

Birds

Migratory Birds

Requirements of the Migratory Bird Treaty Act (1918) (MBTA) will be followed. CDOT has proposed special provisions creating a new Standards and Specification Section 240 - Protection of Migratory Birds to address the requirements of the MBTA. These provisions will ensure that consistent, appropriate and reasonable measures are taken to prevent injury to and death of migratory birds and the CDOT activities are compatible with current federal and state wildlife laws and regulations.

Raptors

CDOW has developed recommended buffer zones and seasonal restrictions for new surface occupancy within certain distances of nest sites of several raptor species (CDOW 2008). Surface occupancy is defined as human-occupied buildings and other structures such as oil and gas wells, roads, railroad tracks, and trails. The Service typically considers that implementation of the CDOW buffers and seasonal restrictions fulfill compliance requirements of the MBTA for raptors.

A raptor nest survey will be conducted prior to project construction to identify raptor nests in the vicinity of the proposed project. If an active raptor nest is found on-site, CDOW-recommended buffers and seasonal restrictions (CDOW 2008) for raptors will be established during construction to avoid nest abandonment.

If disturbance of raptor nests is unavoidable, mitigation measures could include the construction of artificial nests in suitable habitat or enhancement of prey habitat. Artificial nests will be constructed in the same general area as the impacts. If raptor nests will be impacted by the proposed project, specific mitigation measures for impacts to nesting raptors will be developed in coordination with CDOW and the Service prior to construction.

Aquatic Resources

The mitigation measures for state-sensitive fish species described above, including SB 40 certification, design measures to benefit fish, and water quality BMPs, also will benefit other aquatic resources.

Mitigation measures designed to offset impacts to wetlands and Preble's, including habitat replacement/enhancement and the replacement of existing culverts with larger culverts and/or free-spanning bridges, also will improve fish habitat.

List of Preparers and Contacts Made

Preparers

Steve Butler, ERO Resources Corporation
Ron Beane, ERO Resources Corporation

Project Description and Plans Provided By

Felsburg, Holt & Ullevig

References

- Breeding Bird Atlas Explorer (BBA Explorer) 2010. USGS North American BBA Explorer. Available at:
http://www.pwrc.usgs.gov/bba/index.cfm?fa=explore.ProjectHome&BBA_ID=CO1987. Last accessed: November 1.
- Clevenger, T. and M. Huijser. 2009. Handbook for Design and Evaluation of Wildlife Crossing Structures in North America. Prepared for the Federal Highway Administration. Washington, DC. 212 pp.
- Colorado Breeding Bird Atlas II (COBBA II). 2010. Available at:
<http://bird.atlasing.org/Atlas/CO/>. Last accessed: November 1.
- Colorado Department of Transportation (CDOT). 2008. North I-25 Draft Environmental Impact Statement. October.
- Colorado Department of Transportation (CDOT). 2009. Impacted Black-tailed Prairie Dog Policy. Memorandum. January 15.
- Colorado Division of Wildlife (CDOW). 2002. Unpublished black-tailed prairie dog mapping data.
- Colorado Division of Wildlife (CDOW). 2007. Recommended survey protocol and actions to protect nesting burrowing owls.
- Colorado Division of Wildlife (CDOW). 2008. Recommended buffer zones and seasonal restrictions for Colorado raptors. Revised February.

- Colorado Natural Heritage Program (CNHP). 2010. CNHP Tracked Bird Species. Available at: <http://www.cnhp.colostate.edu/download/list/birds.asp>. Last updated: July 23.
- ERO Resources Corporation (ERO). 2008. Wildlife Technical Report: North I-25 EIS, Adams, Boulder, Broomfield, Denver, Larimer, and Weld Counties, Colorado. Prepared for Colorado Department of Transportation Region 4 and Felsburg, Holt & Ullevig. October.
- ERO Resources Corporation (ERO). 2011. Final Biological Assessment; North I-25, Adams, Boulder, Broomfield, Denver, Larimer, and Weld Counties, Colorado. December.
- Ficke, A.D. and C.A. Myrick. 2007. Fish Barriers and Small Plains Fishes: Fishway Design Recommendations and the Impact of Existing Instream Structures, Final Project Report prepared for Colorado Division of Wildlife.
- Hanophy, W. 2009. Fencing with Wildlife in Mind. Colorado Division of Wildlife, Denver, CO. 36 pp
- Knopf, F.L. and M.B. Wunder. 2006. Mountain Plover (*Charadrius montanus*). The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/211>
- Kuenning, R.R. and H.E. Kingery. 1998. Mountain Plover In Colorado Breeding Bird Atlas. (H.E. Kingery, Ed.), Colorado Breeding Bird Atlas Partnership and Colorado Division of Wildlife.
- Natural Diversity Information Source (NDIS). 2010. Wildlife Species Pages. Colorado Division of Wildlife. Available at: <http://ndis.nrel.colostate.edu/>. Accessed October 15, 2010.
- Rocky Mountain Bird Observatory (RMBO). 2008. Unpublished Bald Eagle Watch Data.
- Rocky Mountain Bird Observatory (RMBO). 2009. Unpublished Bald Eagle Watch Data.
- Rocky Mountain Bird Observatory (RMBO). 2010. Unpublished Bald Eagle Watch Data. May 7.
- Ruediger, B. and M. DiGiorgio. 2007. Safe Passage: A user's guide to developing effective highway crossings for carnivores and other wildlife. Produced by the Southern Rockies Ecosystem Project.
- U.S. Fish and Wildlife Service (Service). 2003. Migratory Bird Permit Memorandum. April 15.
- U.S. Fish and Wildlife Service (Service). 2010. Revised Critical Habitat for Preble's Meadow Jumping Mouse (*Zapus hudsonius preblei*) in Colorado. Federal Register; 75: 78429- 78483. December 15.

THIS PAGE INTENTIONALLY LEFT BLANK.

LEGEND

-  Study Corridors
-  Highways
-  Arterial Roads
-  Regional Study Area
-  City Boundaries
-  Cities & Towns in Project Area

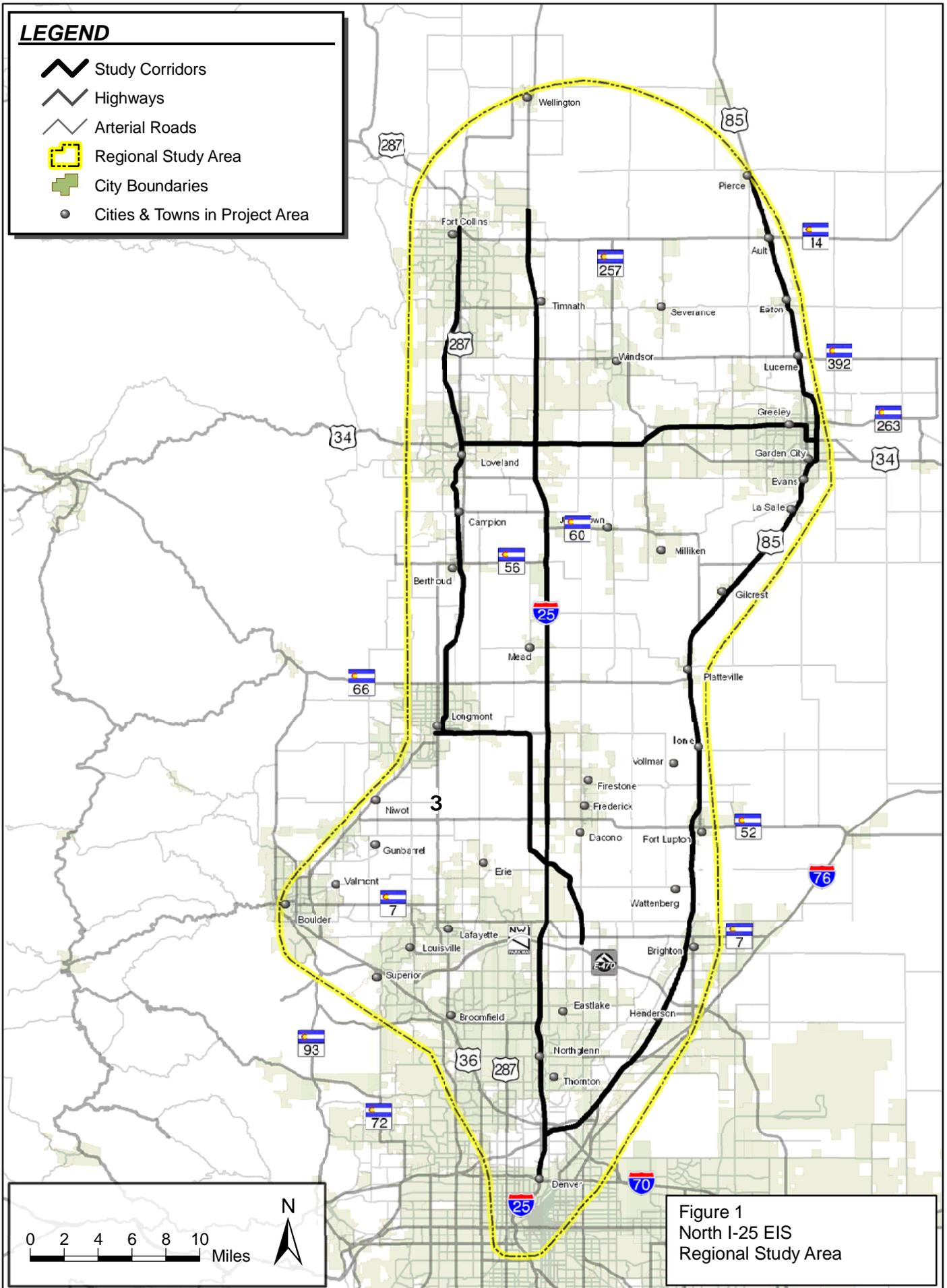
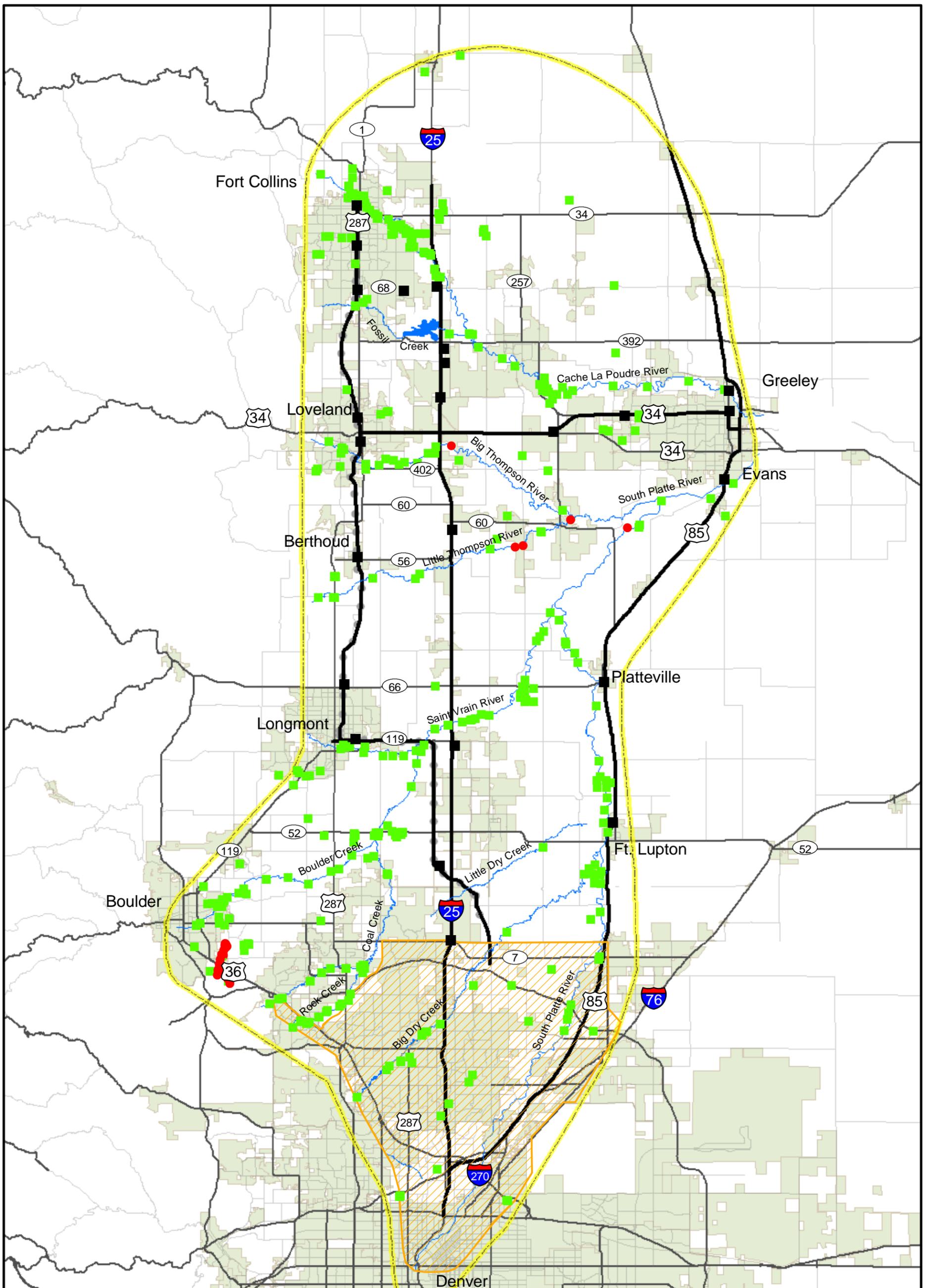


Figure 1
North I-25 EIS
Regional Study Area



ERO Resources Corp.
 1842 Clarkson Street
 Denver, CO 80218
 (303) 830-1188
 Fax: (303) 830-1199

-  Study Corridors
-  Highways
-  Arterial Roads
-  Commuter Rail - Proposed Alignment
-  Transit Stations - Approximate Locations
-  Regional Study Area
-  City Boundaries

-  Preble's Meadow Jumping Mouse Trapped-Found
-  Preble's Meadow Jumping Mouse Trapped-Not Found
-  Preble's Meadow Jumping Mouse Block Clearance

Source: USFWS

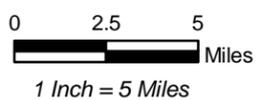


Figure 2
 North I-25 EIS Preble's
 Meadow Jumping Mouse Data

Prepared for: I-25 North
 File: 2455 - Figure 3 PMJM.mxd (GS)
 Date: May 2010

LEGEND

-  Study Corridors
-  CDOT Segment
-  Highways
-  Arterial Roads
-  Regional Study Area
-  City Boundaries
-  Cities & Towns in Project Area
-  Bald Eagle Winter Range
-  Bald Eagle Active Nest Sites (0.5-Mile Buffer)
-  Bald Eagle Unknown Nest Sites (0.5-Mile Buffer)
-  Bald Eagle Winter Forage
-  Bald Eagle Winter Concentration
-  Bald Eagle Summer Forage
-  Bald Eagle Roost Sites
-  Bald Eagle Communal Roost

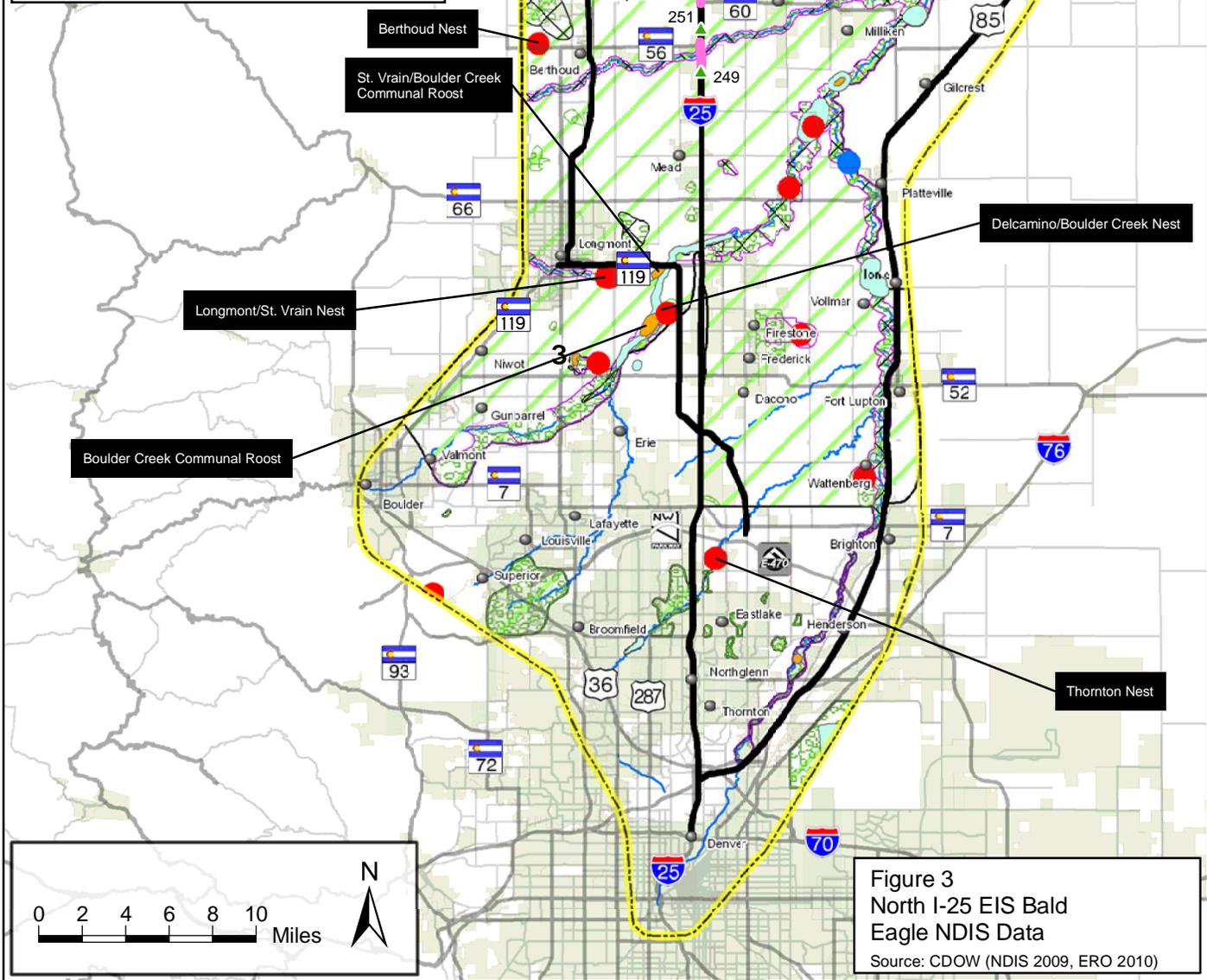


Figure 3
 North I-25 EIS Bald Eagle NDIS Data
 Source: CDOW (NDIS 2009, ERO 2010)

LEGEND

-  Study Corridors
-  CDOT Segment
-  Milepost
-  Highways
-  Cities & Towns in Project Area
-  Arterial Roads
-  Regional Study Area
-  City Boundaries
-  Non-Bald Eagle Raptor Nests (Source: ERO 2006, 2010)
-  Prairie Dogs (Source: NDIS 2006)
-  Prairie Dogs (Source: ERO 2006)
-  Swift Fox Overall Range (Source: NDIS 2009)
-  Great Blue Heron Nesting Areas (Source: NDIS 2009, ERO 2010)

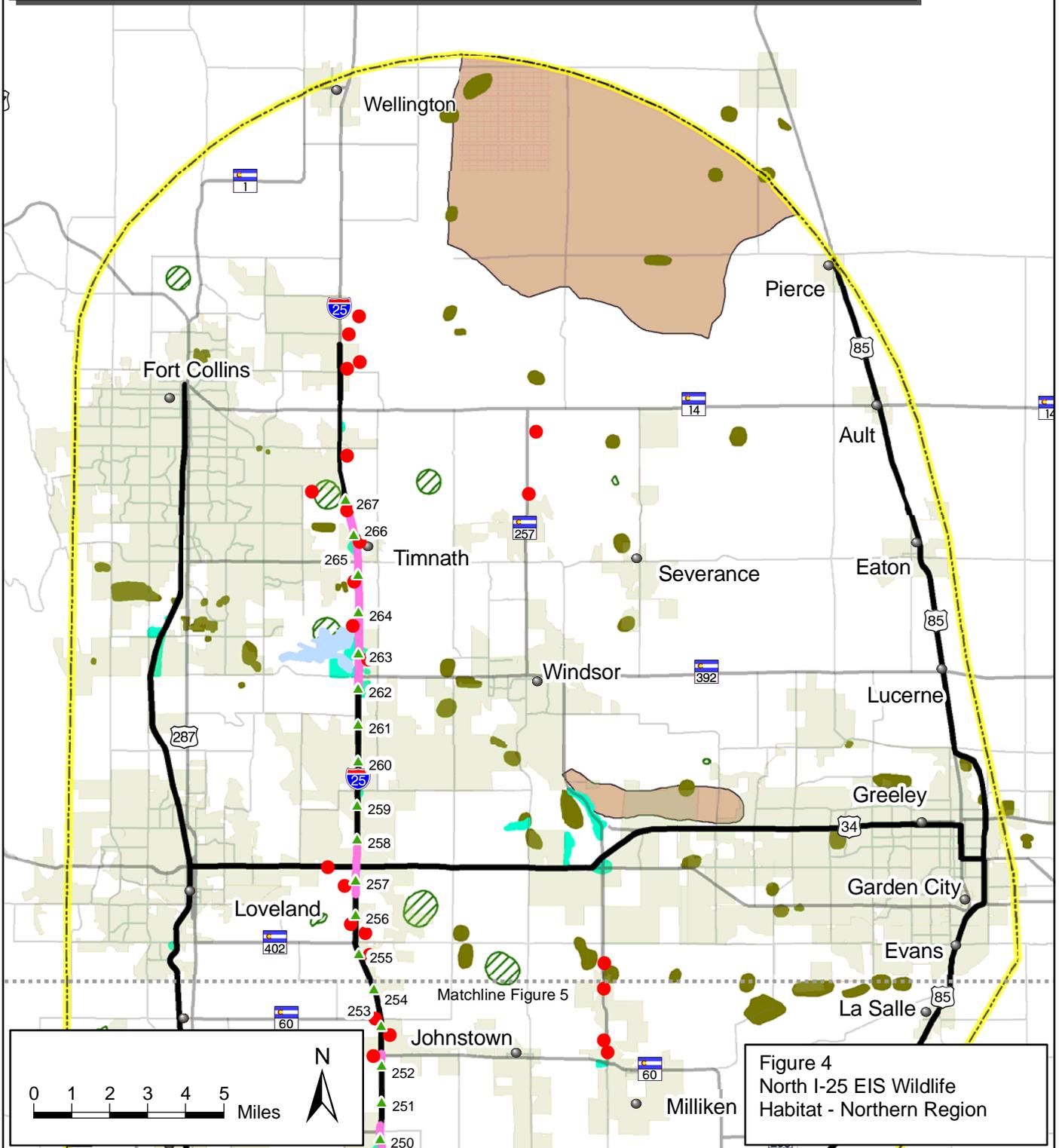


Figure 4
North I-25 EIS Wildlife
Habitat - Northern Region

LEGEND

-  Study Corridors
-  CDOT Segment
-  Milepost
-  Highways
-  Cities & Towns in Project Area
-  Arterial Roads
-  Regional Study Area
-  City Boundaries
-  Non-Bald Eagle Raptor Nests (Source: ERO 2006, 2010)
-  Prairie Dogs (Source: NDIS 2006)
-  Prairie Dogs (Source: ERO 2006)
-  Swift Fox Overall Range (Source: NDIS 2009)
-  Great Blue Heron Nesting Areas (Source: NDIS 2009, ERO 2010)

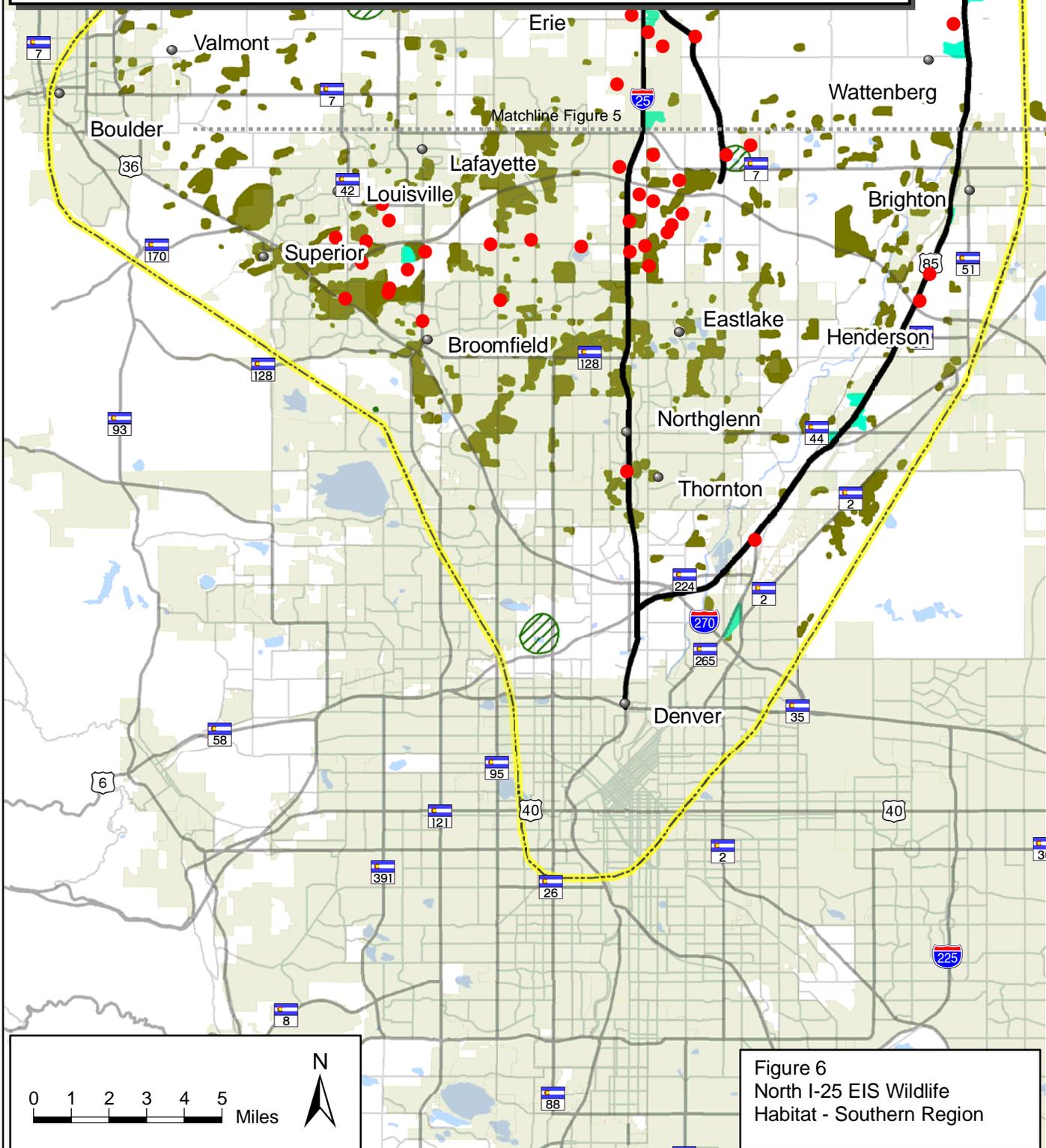


Figure 6
North I-25 EIS Wildlife
Habitat - Southern Region

LEGEND

- | | | | |
|---|---|---|----------------|
|  | Study Corridors |  | Road Kill Data |
|  | Highways |  | Coyote |
|  | Cities & Towns in Project Area |  | Deer |
|  | Arterial Roads |  | Elk |
|  | Regional Study Area |  | Fox |
|  | City Boundaries |  | Raccoon |
|  | Wildlife Crossing Area (Source: ERO 2006) |  | Unknown |

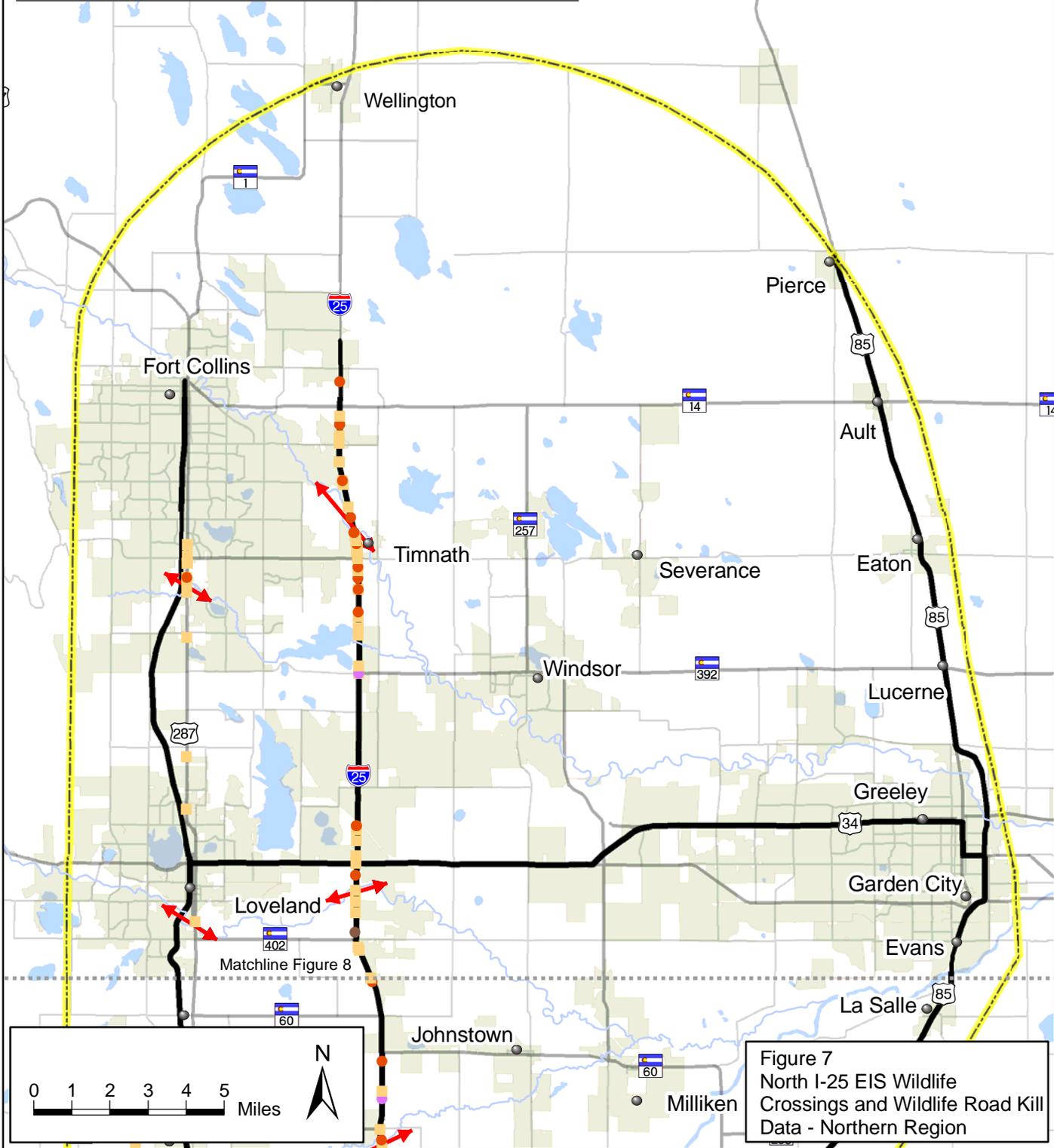
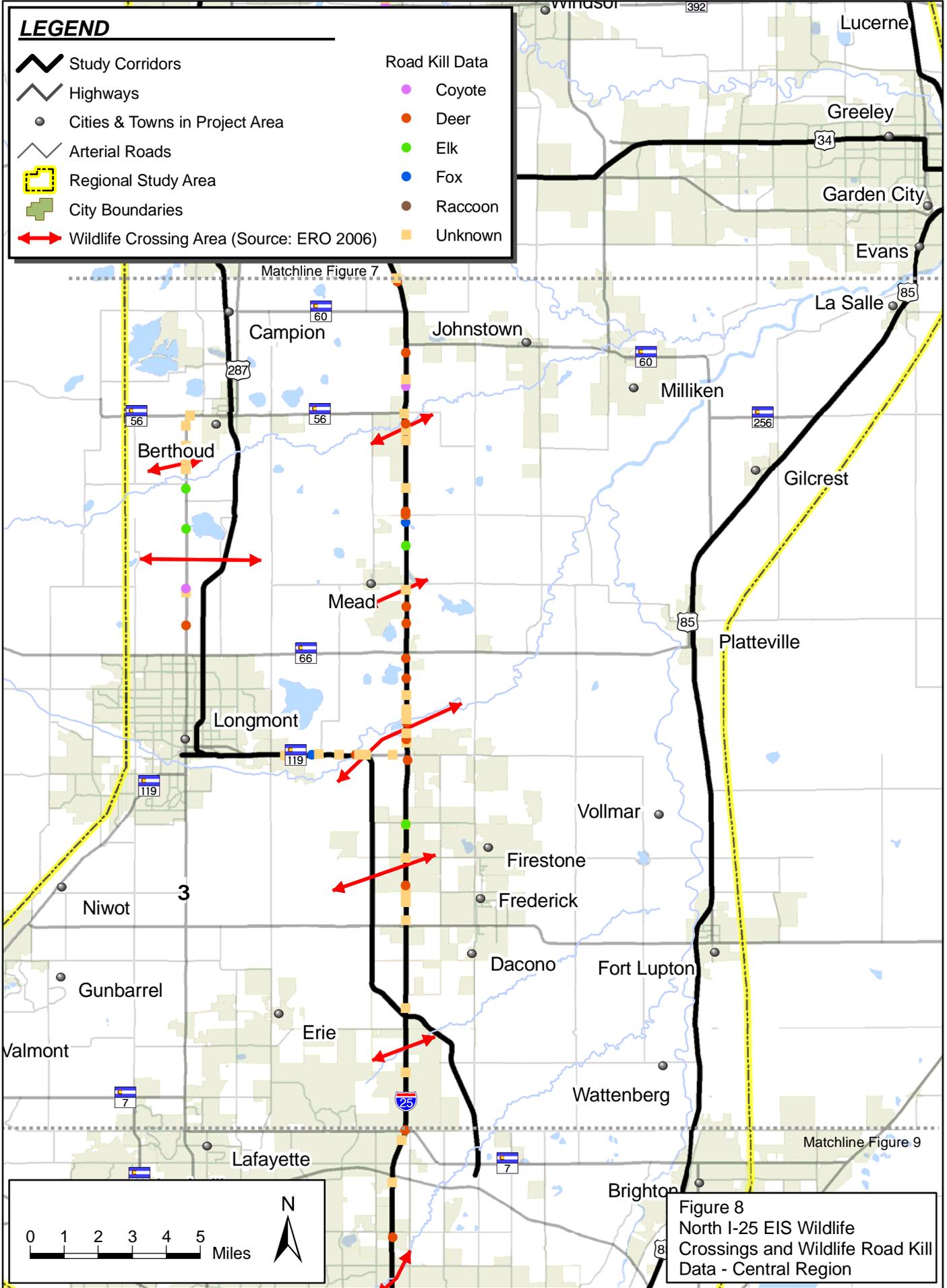


Figure 7
North I-25 EIS Wildlife
Crossings and Wildlife Road Kill
Data - Northern Region

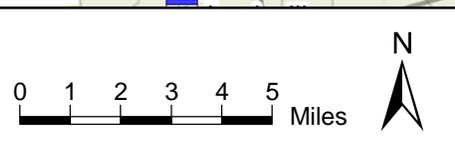


LEGEND

- Study Corridors
- Highways
- Cities & Towns in Project Area
- Arterial Roads
- Regional Study Area
- City Boundaries
- Wildlife Crossing Area (Source: ERO 2006)

- Road Kill Data
- Coyote
 - Deer
 - Elk
 - Fox
 - Raccoon
 - Unknown

Figure 8
North I-25 EIS Wildlife
Crossings and Wildlife Road Kill
Data - Central Region



LEGEND

-  Study Corridors
-  Highways
-  Cities & Towns in Project Area
-  Arterial Roads
-  Regional Study Area
-  City Boundaries
-  Wildlife Crossing Area (Source: ERO 2006)

- Road Kill Data
-  Coyote
 -  Deer
 -  Elk
 -  Fox
 -  Raccoon
 -  Unknown

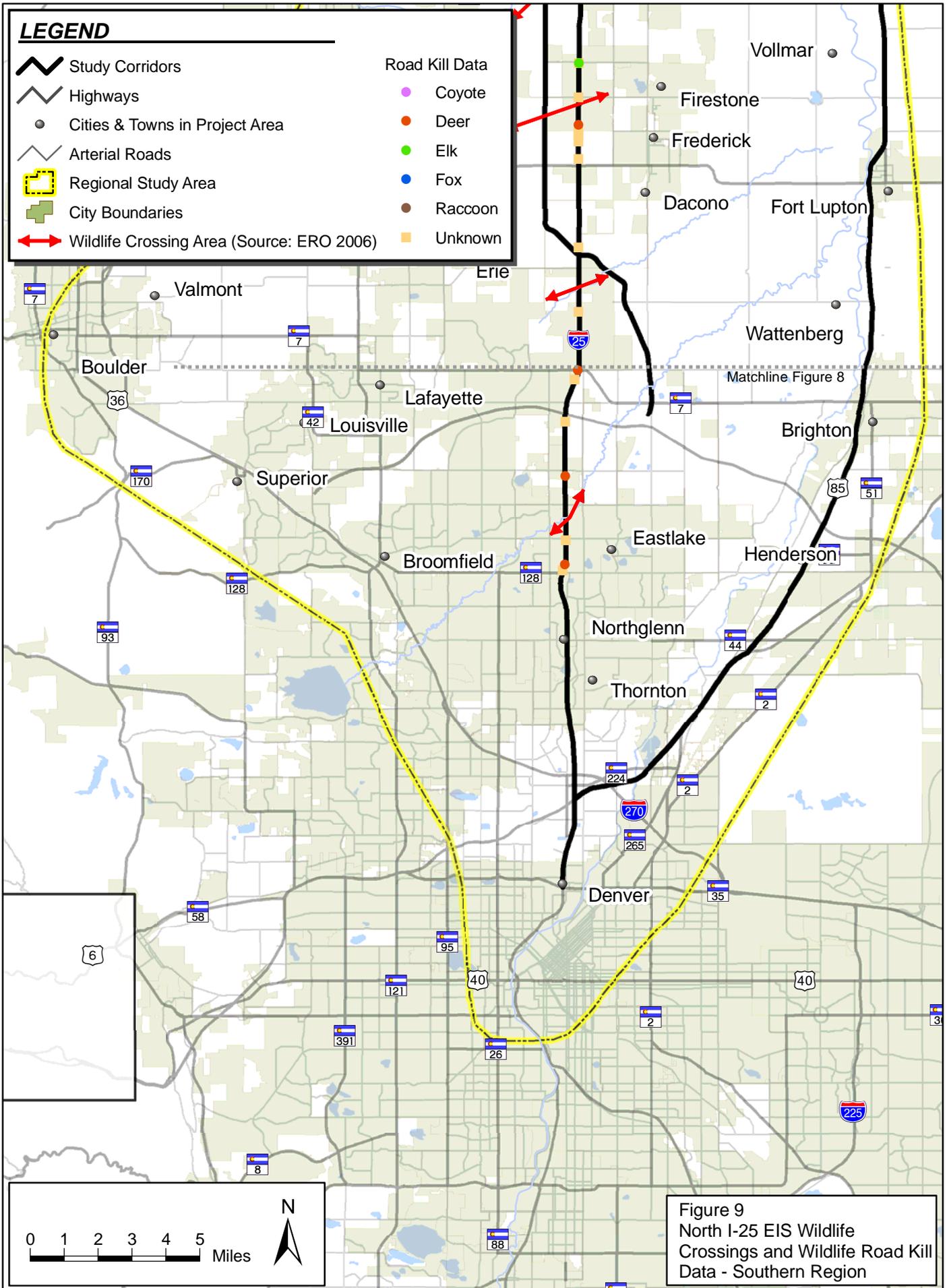


Figure 9
North I-25 EIS Wildlife
Crossings and Wildlife Road Kill
Data - Southern Region

THIS PAGE INTENTIONALLY LEFT BLANK.