

## 3.12 WILDLIFE

This section addresses wildlife, wildlife crossings, and aquatic resources. Important wildlife resources in the project area include riparian and aquatic habitats and wildlife movement corridors.

### 3.12.1 Regulatory Framework

Colorado Department of Transportation (CDOT) projects must comply with federal, state, and local laws and regulations protecting wildlife species including:

- ▶ The Fish and Wildlife Coordination Act of 1934, as amended (16 United States Code [USC] §§ 661-667e)
- ▶ The Migratory Bird Treaty Act of 1918, as amended (16USC §§ 703-712)
- ▶ Executive Order 13186
- ▶ Colorado Senate Bill (SB) 40 (SB40) (33-5-101-107, CRS 1973, as amended)
- ▶ The Fossil Creek Reservoir Area Plan

The Fish and Wildlife Coordination Act requires the federal action agency to consult with the United States Fish and Wildlife Service (USFWS) and the Colorado Division of Wildlife (CDOW) on issues related to conservation of fish and wildlife resources for federal projects resulting in modifications to waters or channels of a body of water (16USC §§ 661-667e).

Migratory birds, including raptors and active nests, are protected under the Migratory Bird Treaty Act. The act prohibits activities that may harm or harass migratory birds during the nesting and breeding season. Removal of active nests that results in the loss of eggs or young is also prohibited. In Colorado, most birds except the European starling, house sparrow, and rock dove (pigeon) are protected under the Migratory Bird Treaty Act (16USC §§ 703-712).

Executive Order 13186 directs federal agencies to take certain actions to implement the Migratory Bird Treaty Act (86 FR 3853). The Bald and Golden Eagle Protection Act (16USC §§ 668-668d) includes several prohibitions not found in the Migratory Bird Treaty Act, such as molestation or disturbance. In 1962, the Bald and Golden Eagle Protection Act was amended to include the golden eagle.

SB40 (33-5-101-107, CRS. 1973, as amended) 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. CDOT has guidelines for SB40 wildlife certification, which were developed in cooperation with CDOW (CDOT 2003).

#### What's in Section 3.12?

#### 3.12 Wildlife

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1 The Fossil Creek Reservoir Area Plan establishes natural area buffers for bald eagles, great  
2 blue herons, waterfowl, and other wildlife. More detail on all regulations pertaining to wildlife  
3 resources is provided in the *Wildlife Technical Report* [ERO Resources Corporation  
4 (ERO) 2008].

### 5 **3.12.2 Affected Environment**

6 Wildlife resources were reviewed during the initial screening of alternatives using existing  
7 information from readily available sources. Existing information was reviewed and special  
8 concerns related to the project were identified through coordination and consultation with  
9 USFWS, CDOW, the Colorado Natural Heritage Program (CNHP), and local open space  
10 management agencies. Once the proposed project area was identified, detailed habitat  
11 evaluations were performed in the project area based on fieldwork and additional review of  
12 existing information for raptors and wildlife crossings. Specific methods used for data  
13 collection are described in detail in the *Wildlife Technical Report* (ERO 2008).

14 Wildlife in the regional study area generally consists of species adapted to highly disturbed  
15 urban habitats or cultivated lands. Aquatic and riparian habitats in the regional study area,  
16 although typically disturbed by human activity, provide habitat for a greater diversity of species.  
17 The quality and connectivity of wildlife habitat in the regional study area is supported by the  
18 large expanses of protected open space or otherwise undeveloped land, which preserves  
19 several habitat types, as well as movement corridors between different habitat areas. Wildlife  
20 Refuges and Natural Areas are discussed in detail in **Chapter 5 Section 4(f) Evaluation**.

#### 21 **3.12.2.1 MIGRATORY BIRDS**

22 Nearly all bird species present in the regional study area are protected under the Migratory  
23 Bird Treaty Act. Bird species use different habitat types in the project area for shelter,  
24 breeding, wintering, and foraging at various times during the year. Common birds occurring  
25 in the regional study area include common grackle (*Quiscalus quiscula*), house finch  
26 (*Carpodacus mexicanus*), mourning dove (*Zenaida macroura*), Canada goose (*Branta*  
27 *canadensis*), American robin (*Turdus migratorius*), barn swallow (*Hirundo rustica*), vesper  
28 sparrow (*Pooecetes gramineus*), western meadowlark (*Sturnella neglecta*), horned lark  
29 (*Eremophila alpestris*), killdeer (*Charadrius vociferous*), and black-billed magpie (*Pica pica*).  
30 A comprehensive list of bird species known to occur in the regional study area is found in  
31 Appendix B of the *Wildlife Technical Report* (ERO 2008).

#### 32 **3.12.2.2 RAPTORS**

33 Raptors commonly occurring in and near the project area include the red-tailed hawk (*Buteo*  
34 *jamaicensis*), great horned owl (*Bubo virginianus*), and American kestrel (*Falco sparverius*).  
35 Other raptors likely to occur near the project area include Cooper's hawk (*Accipiter cooperii*),  
36 Swainson's hawk (*Buteo swainsoni*), ferruginous hawk (*Buteo regalis*), northern harrier  
37 (*Circus cyaneus*), and rough-legged hawk (*Buteo lagopus*) (NDIS, 2006). Raptor nests in  
38 and near the project area were mapped in April 2005 and April 2006 (ERO, 2006). While  
39 most raptor nests observed were unoccupied; the occupied nests were mostly used by red-  
40 tailed hawks, Swainson's hawks, or great horned owls.

### 3.12.2.3 BIG GAME AND MOVEMENT CORRIDORS

I-25 is a substantial barrier to east-west movements of big game and other wildlife in the project area due to traffic, noise, and lack of cover. Existing and proposed rail corridors also are a potential barrier to wildlife movement. Existing wildlife crossings in the project area occur primarily where major drainages cross the project area under bridges or culverts. Wildlife crossings for big game, such as mule deer (*Odocoileus hemionus*) and white-tailed deer (*Odocoileus virginianus*), occur along the Cache la Poudre, Big Thompson, and Little Thompson rivers, and St. Vrain Creek (Vierra, personal communication, 2006; Huwer, personal communication, 2006). The area around Ish Reservoir is also a movement corridor for mule deer and white-tailed deer (Huwer, personal communication, 2006). American elk (*Cervus elaphus*) are known to occasionally move through the project area along the Big Thompson River corridor at the proposed commuter rail alignment (Huwer, personal communication, 2006). Black bear (*Ursus americanus*) and mountain lion (*Felis concolor*) may occasionally occur in the western portion of the project area, possibly along the proposed commuter rail alignment from Fort Collins south to Loveland (NDIS, 2006). The project area is on the periphery of the occupied range for both of these species (NDIS, 2006). Mountain lions may occasionally move through the project area along major drainages (Huwer, personal communication, 2006).

Wildlife crossing areas and movement corridors were identified based on input from CDOW staff, review of road kill data collected by CDOT and the Colorado State Patrol (from 1993 to 2004), and field review (refer to **Table 3.12-1**). Additional data was opportunistically collected by CDOT maintenance crews from 2004 to 2007.

1 **Table 3.12-1 Summary of Wildlife Crossing Areas Identified in the Project Area.**

<b>Wildlife Crossing Area</b>	<b>Wildlife Usage</b>	<b>Existing Structure</b>
Cache la Poudre River at I-25	The section of I-25 from SH 14 south to SH 392 is used as a crossing area by deer and other wildlife, as shown by the relatively high number of wildlife collisions in this area, and as reported by CDOW staff (Vierra, pers. comm. 2006).	Multiple-span bridges northbound and southbound . The existing bridges provide good passage for wildlife.
Fossil Creek at the BNSF alignment	No data is available for collisions at the railway, but a few collisions have been recorded on US 287 near Fossil Creek, which is less than 0.5 mile downstream from the railway crossing.	Single-span bridge. The existing bridge over the creek appears to provide good crossing opportunities.
Big Thompson River at BNSF alignment	CDOW biologists indicated that the Big Thompson River in this area is a movement corridor for deer, elk, and other wildlife (Vierra, pers. comm. 2006; Huwer, pers. comm. 2006). Relatively few wildlife collisions have been documented at US 287 near this location.	Multiple-span bridge. The existing bridge provides good passage for wildlife.
Big Thompson River at I-25	CDOW biologists indicated that the Big Thompson River in this area is a movement corridor for deer and other wildlife (Huwer, pers. comm. 2006). The section of I-25 extending about 3 miles north and south of the Big Thompson River is used as a crossing site by wildlife, as indicated by the relatively high number of wildlife collisions recorded in this area.	Multiple-span bridges (northbound, southbound, and service road). The existing bridges are adequately sized for deer and other wildlife.
Little Thompson River at BNSF alignment	The Little Thompson River is a movement corridor for deer and other wildlife (Huwer, pers. comm. 2006). Colorado State Patrol data shows that several collisions have been documented along US 287 about 2 miles to the west.	Multiple-span bridge. The existing bridge is adequately sized for deer and other wildlife.
Little Thompson River at I-25	The Little Thompson River is a movement corridor for deer and other wildlife (Huwer, pers. comm. 2006). CSP data shows that several collisions have been documented along I-25 near the Little Thompson River.	Multiple-span bridges (northbound, southbound, and service road). The existing bridges are adequately sized for deer and other wildlife.
Ish Reservoir Area	CDOW biologists indicated that a deer crossing problem occurs along US 287 west of Ish Reservoir (Huwer, pers. comm. 2006). CSP collision data indicates that deer, elk, and coyote have been killed crossing this section of US 287. The BNSF rail alignment passes to the east of Ish Reservoir, about 1.5 miles to the east of US 287. Wildlife crossings of the railway likely occur at a similar rate as US 287.	No major structures, crossings occur at grade.
I-25 between Little Thompson River and St. Vrain Creek	CSP collision data shows that deer and other wildlife have been killed along the section of I-25 between the Little Thompson River and St. Vrain Creek. The land surrounding I-25 in this area is mostly open and agricultural, and wildlife are killed when attempting to cross at grade.	Concrete box culvert at North Creek, adequate for small- and medium-sized mammals; inadequate for deer and larger mammals.

1 **Table 3.12-1 Summary of Wildlife Crossing Areas Identified in the Project Area.**  
2 **(cont'd)**

Wildlife Crossing Area	Wildlife Usage	Existing Structure
St. Vrain Creek at SH 119	CDOW biologists reported that St. Vrain Creek serves as a movement corridor for deer and other wildlife (Huyer, pers. comm. 2006), and a broad, open area occurs at this location on both sides of SH 119 connecting undeveloped land along St. Vrain and Boulder creeks to St. Vrain State Park to the north and providing a natural movement corridor for wildlife.	Multiple-span bridge. The existing wildlife passage under SH 119 at St. Vrain Creek is undersized for deer due to low vertical clearance, but is large enough for small- and medium-sized mammals.
St. Vrain Creek at I-25	CDOW biologists reported that St. Vrain Creek serves as a movement corridor for deer and other wildlife (Huyer, pers. comm. 2006). CSP collision data shows that deer and other wildlife have been killed crossing I-25 near St. Vrain Creek. This crossing is used by deer, as indicated by tracks observed in the field.	Multiple-span bridge (northbound, southbound, and service road). The existing wildlife passage under I-25 is adequately sized for deer and other wildlife.
I-25 west of Firestone and Frederick	CSP collision data indicate that deer and other wildlife are occasionally killed along a 3-mile section of I-25 west of Firestone and Frederick. The surrounding area is mostly open and agricultural, and wildlife are killed when attempting to cross at grade.	No major structures.
Commuter rail alignment west of Firestone and Frederick	The rail alignment follows Weld County Road (WCR) 7 about 1 mile west of I-25. No wildlife collision data is available for this area, but wildlife movements probably are similar to I-25 west of Firestone and Frederick, as described above.	No major structures.
Little Dry Creek at I-25	Field review indicated Little Dry Creek at I-25 could be a potential wildlife crossing area, but collision data indicates that only occasional collisions with wildlife occur in this area and CDOW did not identify Little Dry Creek as a movement corridor.	Concrete box culvert; adequately sized for small- and medium-sized mammals.
Little Dry Creek at Commuter Rail Alignment	Field review indicated Little Dry Creek at the commuter rail alignment could be a potential wildlife movement area, but no CSP data is available for this area and CDOW did not identify Little Dry Creek as a movement corridor.	None, but no existing rail line is present, so no movement barriers exist in this area.
Big Dry Creek at I-25	CSP collision data show a few collisions on I-25 near Big Dry Creek, but CDOW did not identify this area as a movement corridor.	Multiple-span bridge; the existing bridge is adequately sized for deer and other wildlife.

1 **3.12.2.4 SENSITIVE WILDLIFE HABITAT AREAS**

2 Several sensitive wildlife habitat areas were identified during field work. These areas were  
3 identified as sensitive wildlife habitat because they are wildlife crossing areas or because  
4 they provide known habitat for threatened, endangered, or sensitive species as defined by  
5 the USFWS or CDOW (refer to **Section 3.13 Threatened, Endangered, and State Sensitive**  
6 **Species**). These habitat areas are listed in **Table 3.12-2**; their locations are shown in  
7 **Figure 3.12-1**.

**Table 3.12-2 Sensitive Wildlife Habitats in the Project Area**

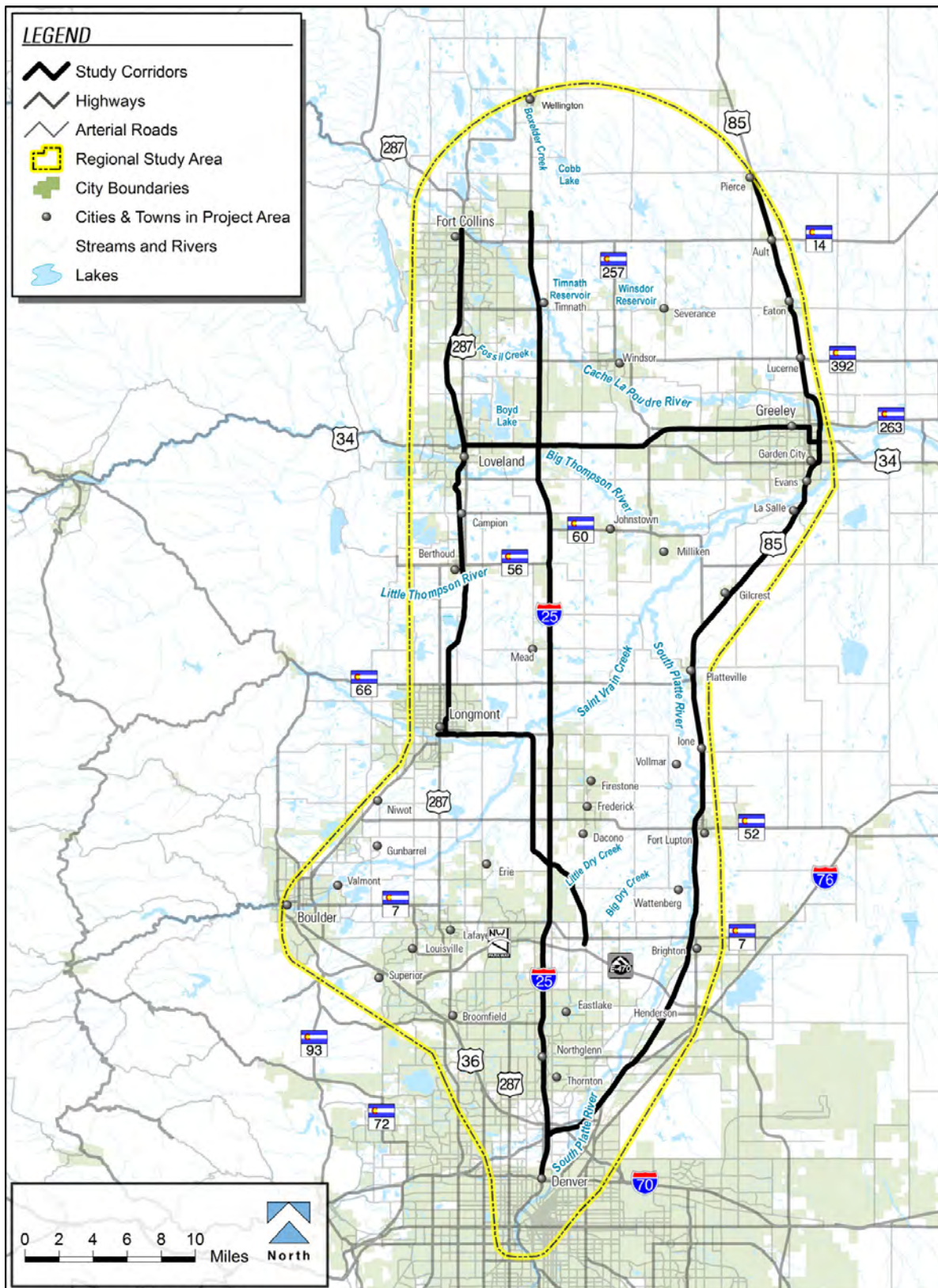
Sensitive Wildlife Habitat Area	Comments
Cache la Poudre River	Known occurrences of brassy minnow and Iowa darter; bald eagle winter concentration and summer forage; white-tailed deer winter range and concentration area; wildlife movement corridor
Fossil Creek Reservoir	Bald eagle winter roost occurs at reservoir.
Big Thompson River	Known occurrence of Preble's and likely occurrence of Iowa darter; bald eagle winter concentration and summer forage; white-tailed deer winter range and concentration area; wildlife movement corridor; Big Thompson State Wildlife Area occurs just west of I-25
Little Thompson River	Possible occurrence of Preble's, bald eagle winter concentration and summer forage, white-tailed deer winter range and concentration area, wildlife movement corridor, CNHP Potential Conservation Area at U.S. 287
Ish Reservoir and surrounding area	Great blue heron rookery; wildlife crossing area.
St. Vrain Creek	Bald eagle winter roost west of I-25; bald eagle winter concentration and summer forage; known occurrences of common shiner, brassy minnow, Iowa darter, and stonecat; white-tailed deer winter range and concentration area; wildlife movement corridor; St. Vrain State Park occurs just west of I-25
South Platte River	Known occurrences of common shiner and brassy minnow; wildlife movement corridor.

*Sources: NDIS, 2006; CNHP, 2005; CDOW, 2005; USFWS, 2005, (also refer to **Section 3.13** Threatened, Endangered, and State Sensitive Species).*

8 **3.12.2.5 OTHER WILDLIFE**

9 **Table 3.12-3** lists other wildlife species commonly found in the project area including big  
10 game species, other mammals, raptors, other migratory birds, reptiles, and amphibians.

1 Figure 3.12-1 Sensitive Wildlife Habitats in the Project Area



1 **Table 3.12-3 Common Wildlife Species in the Project Area**

Habitat	Mammals	Birds	Reptiles and Amphibians
Urban and developed areas	Red fox, raccoon, striped skunk, big brown bat, fox squirrel, deer mouse, and house mouse	House sparrow, European starling, common grackle, house finch, mourning dove, rock dove, Canada goose, American robin, and barn swallow	N/A
Riparian and wetlands	Mule deer, white-tailed deer, coyote, red fox, raccoon, striped skunk, eastern cottontail, big brown bat, meadow vole, prairie vole, deer mouse, and house mouse	Red-tailed hawk, Cooper's hawk, Swainson's hawk, northern harrier, great horned owl, American kestrel, great blue heron, red-winged blackbird, song sparrow, common yellowthroat, common snipe, northern oriole, American goldfinch, yellow warbler, and Canada goose	Plains gartersnake, western painted turtle, bullfrog, western chorus frog, Woodhouse's toad, and tiger salamander
Grassland	Mule deer, coyote, American badger, striped skunk, red fox, white-tailed jackrabbit, desert cottontail, black-tailed prairie dog, deer mouse, meadow vole, prairie vole, and house mouse	Rough-legged hawk, red-tailed hawk, Swainson's hawk, northern harrier, great horned owl, American kestrel, vesper sparrow, western meadowlark, grasshopper sparrow, horned lark, lark bunting, house sparrow, European starling, common grackle, mourning dove, Canada goose, killdeer, and black-billed magpie	Bullsnake, yellow-bellied racer, western rattlesnake, lesser earless lizard, and plains spadefoot
Streams, lakes, and ponds	Muskrat and beaver	American avocet, mallard, pintail, and American white pelican	Plains gartersnake, western painted turtle, western chorus frog, Woodhouse's toad, tiger salamander, and bullfrog
Bridges and underpasses	N/A	Cliff swallow, barn swallow, and rock dove	N/A

Source: Species listed as "common" or "abundant" in Adams, Boulder, Larimer, or Weld counties by CDOW (NDIS, 2006) and likely to occur in the project area based on suitable habitat.



### 3.12.2.6 AQUATIC RESOURCES

Ditches, streams, and water bodies in the project area potentially support a variety of aquatic insects, macroinvertebrates, and fish. Common fish species in creeks and streams in the project area include common carp (*Cyprinus carpio*), creek chub (*Semotilus atromaculatus*), fathead minnow (*Pimephales promelas*), Johnny darter (*Etheostoma nigrum*), longnose sucker (*Catostomus catostomus*), longnose dace (*Rhinichthys cataractae*), green sunfish (*Lepomis cyanellus*), and white sucker (*Catostomus commersoni*). Several state-listed threatened, endangered, or sensitive fish species are known to occur in the regional study area, specifically common shiner (*Notropis cornutus*), brassy minnow (*Hybognathus hankinsoni*), Iowa darter (*Etheostoma exile*), and stonecat (*Noturus flavus*). These state listed species are addressed in **Section 3.13 Threatened, Endangered, and Sensitive Species**. A complete list of fish species documented in lakes, rivers, and streams in the regional study area is provided in Appendix C of the *Wildlife Technical Report* (ERO, 2008).

The CNHP designated a Proposed Conservation Area, which includes the Little Thompson River at US 287. This reach of the Little Thompson River provides habitat for a number of native fish and a greater diversity of mayflies, caddisflies, and stoneflies compared with other Front Range streams (CNHP, 2005). Six fish species including creek chub, longnose dace, fathead minnow, longnose sucker, white sucker and green sunfish were documented in the Little Thompson on May 22, 2001 (CNHP, 2005). Results of this survey are similar to those conducted by the CDOW in 1982 and 1997. All species captured are native and common in streams along the Front Range corridor. Additionally, only a few fish out of several hundred captured showed signs of parasites or infection, indicating a healthy community (CNHP, 2005).

### 3.12.3 Environmental Consequences

This section describes the effects of the No-Action Alternative and Packages A and B on wildlife.

Given the large scale of the project, and the large size of the project area, effects were estimated on a broad scale using data from a variety of sources including the USFWS, CDOW, and project specific data collected by CDOT contractors. Direct effects to wildlife habitat were quantified where possible by measuring acres of habitat within the project limits of disturbance using GIS overlays. Effects to threatened, endangered, and state sensitive species are described in **Section 3.13.3**

- ▶ Effects on migratory bird habitat were estimated based on the acreage of wetland, riparian, and grassland habitat affected by each component.
- ▶ Effects on raptors for each component were estimated based on the number of raptor nests identified within 0.25 mile of the project area for each component.
- ▶ Effects on big game and movement corridors for each component were estimated subjectively based on the number and location of identified movement corridors crossed by each component.
- ▶ Effects on other sensitive wildlife habitat (including fish) were estimated based on acres of riparian habitat affected within identified sensitive areas such as the riparian corridors along the Cache la Poudre River, Big Thompson River, Little Thompson River, and St. Vrain Creek.
- ▶ Effects on aquatic habitat were estimated based on acres of open water directly disturbed.

1 Effects are evaluated by alternative component where possible because the Preferred  
2 Alternative may include components from each of these alternative packages. Direct effects  
3 and indirect effects were evaluated. Effects were evaluated quantitatively where possible or  
4 qualitatively where quantification was not possible or quantitative data were not available.  
5 Mitigation measures to address adverse effects of the alternatives to wildlife are discussed in  
6 **Section 3.12.4 Mitigation Measures.**

### 7 **3.12.3.1 NO-ACTION ALTERNATIVE**

8 The No-Action Alternative includes major and minor structure rehabilitation, replacement or  
9 rehabilitation of existing pavement, and minor safety modifications by 2030. These actions  
10 would take place regardless of whether any of the proposed improvements in Packages A  
11 or B occur. The No-Action Alternative is described in detail in **Chapter 2 Alternatives.**

12 Under the No-Action Alternative, existing conditions would continue. With increasing traffic  
13 volumes and continuing commercial and residential development in the project area, some  
14 effects to wildlife would be expected. Effects from existing or increasing traffic volumes on  
15 wildlife include mortality from vehicle collisions and disturbance from noise. Insufficient traffic  
16 capacity on I-25 could result in increased traffic on secondary roads, leading to increased  
17 mortality of wildlife from collisions and increased disturbance from noise. Effects from  
18 continued development in the I-25 corridor would include direct loss of habitat and increasing  
19 habitat fragmentation.

### 20 **3.12.3.2 PACKAGE A**

21 Package A includes construction of additional general purpose lanes on I-25, construction  
22 and implementation of commuter rail, and implementation of commuter bus service.  
23 Components of this build package are described in detail in **Chapter 2 Alternatives.**  
24 **Table 3.12-3** through **Table 3.12-6** below summarize environmental consequences to  
25 wildlife associated with Package A components. **Tables 3.12-9** through **3.12-12** provide a  
26 comparison of impacts between Package A and Package B components.

#### 27 *Package A Highway Components*

28 Overall, direct effects on wildlife from Package A highway components would result primarily  
29 from road widening, and replacement and construction of new bridges. The types of effects  
30 from the highway components would include habitat loss, habitat fragmentation, and  
31 disturbance during construction. Indirect effects include impacts to water quality from  
32 increased sedimentation, increased traffic resulting in increased wildlife mortality, and  
33 increased disturbance from vehicle lights. Most permanent habitat loss would occur in  
34 permanently degraded areas such as mowed rights-of-way adjacent to the existing highway.  
35 Effects to migratory birds, raptors, movement corridors, sensitive wildlife habitat areas, other  
36 wildlife, and aquatic resources from Package A highway components are described below.

37 **Migratory Birds.** Package A highway components would directly affect wetland, riparian,  
38 and grassland habitat for migratory birds. Direct effects to migratory birds would occur from  
39 highway widening and construction of associated facilities. Direct effects would include  
40 habitat loss, displacement during construction, increased habitat fragmentation, and  
41 destruction of nests during construction. A temporary loss of habitat would occur when  
42 grassy areas are cleared and grubbed during construction, or when structures used for  
43 nesting are replaced. Impacts to wetlands from the Package A highway components are

1 quantified in **Section 3.8 Wetlands**. Ground nesting birds would likely be most affected  
2 because the grassland would be the habitat most affected by the project. Migratory birds  
3 using riparian areas would be temporarily displaced during bridge widening and replacement  
4 activities and their nests could be disturbed or destroyed. Cliff swallows, which often nest on  
5 bridges and overpasses, would be directly affected by nest destruction or nesting  
6 disturbance during bridge replacement. Indirect effects include increased disturbance due to  
7 noise and light from vehicles, and increased mortality from collisions with vehicles.

8 **Raptors.** Package A highway components would potentially affect seven existing raptor  
9 nests located within 0.25 mile of the edge of the project area during surveys in 2005 and  
10 2006. Direct effects include loss of raptor hunting habitat within the existing highway right-of-  
11 way. Loss of hunting habitat would most likely effect common, human-tolerant species such  
12 as red-tailed hawks and American kestrels. Raptors requiring large trees for nesting or  
13 perching would be affected where trees would be cut down or where trees are located in  
14 close proximity to highway or railway improvements. Indirect effects include increased  
15 potential for raptor collisions with vehicles as a result of increased traffic, behavioral  
16 disturbance induced by encroachment of human activities within 0.25 to 0.33 mile of nests  
17 (CDOW 2002), increased noise, and increased disturbance from vehicle lights. Some  
18 behavioral disturbance could be temporary as raptors adapt to the changed environment.

19 **Big Game and Movement Corridors.** Package A highway components would affect four  
20 wildlife movement corridors located at the Cache la Poudre River, Big Thompson River, Little  
21 Thompson River, and Little Dry Creek (**Table 3.12-4**). Roads and transportation corridors  
22 have many potential effects on wildlife, including habitat fragmentation, reduced access to  
23 habitat, population fragmentation and isolation, disruption of dispersal patterns, and mortality  
24 from collisions with vehicles (Jackson, 2000). Movement corridors for big game and other  
25 wildlife are typically located along riparian corridors and stream crossings in the project area  
26 since bridges and culverts at these locations provide an opportunity for wildlife to cross  
27 under the highway or railway. Underpasses and culverts are used by many species of  
28 wildlife during seasonal migrations, or to reach suitable habitat on the other side of the  
29 highway or railway (Barnum, 2003). Without access to crossing sites such as culverts or  
30 bridges, wildlife would either avoid crossing, resulting in isolation from suitable habitat, or  
31 risk being killed by vehicles while attempting to cross the highway.

1 **Table 3.12-4 Effects to Wildlife Movement Corridors from Package A**  
2 **Highway Components**

Component		Effects on Wildlife Movement Corridors
A-H1	Safety Improvements: SH 1 to SH 14	No additional lanes are proposed in this area, and long-term effects to wildlife movements from this would be minor (i.e. the same as under the No-Action Alternative).
A-H2	General Purpose Lane Improvements: SH 14 to SH 60	Construction of additional lanes under this component would increase existing fragmentation of habitat by I-25. Bridges at the Cache la Poudre and Big Thompson rivers would be replaced with wider structures, slightly decreasing the openness of the wildlife crossings under the bridges at these locations. These bridges would continue to provide movement corridors beneath the highway.
A-H3	General Purpose Lane Improvements: SH 60 to E-470	Construction of additional lanes under this component would increase existing fragmentation of habitat by I-25. Bridges at Little Thompson River and Little Dry Creek would be replaced with wider structures, slightly decreasing the openness of the wildlife crossings under the bridges at these locations. These bridges would continue to provide movement corridors beneath the highway. The size of the bridges over St. Vrain Creek at I-25 would not be modified, and these bridges would continue to provide an underpass for wildlife.
A-H4	Structure Upgrades: E-470 to US 36	No additional lanes are proposed under this component, and long-term effects to wildlife movements from this would be minor (i.e. the same as under the No-Action Alternative).

3 Big game movement corridors in riparian areas would be temporarily disrupted during  
4 bridge-widening and replacement activities. Many species are more likely to use  
5 underpasses that are wider or more open (Jackson and Griffin, 2000; Barnum, 2003).  
6 Replacement of culverts or bridges with larger culverts or bridges would benefit wildlife over  
7 the long term by creating wider movement corridors and increasing the overall openness  
8 ratio. East-west movements of deer and other mammals are already limited by the existing  
9 lanes of I-25, but the addition of new general purpose lanes could result in increased  
10 mortality due to collisions with vehicles. Construction of new retaining walls would also  
11 create barriers to wildlife movements across the highway, and would change wildlife  
12 crossing locations if existing at-grade crossing sites are blocked by walls (Barnum, 2003).  
13 Existing bridges that provide suitable underpasses for wildlife would likely become more  
14 important after construction of additional traffic lanes and retaining walls.

15 **Sensitive Wildlife Habitat Areas.** Package A highway components would affect 1.93 acres  
16 of sensitive wildlife habitat areas shown in **Table 3.12-5**. Other sensitive wildlife habitat  
17 areas in the project area are primarily riparian and wetland areas associated with major  
18 drainageways. These areas correspond closely with movement corridors for big game and  
19 other wildlife. Effects to sensitive wildlife habitat from Package A highway components would  
20 include removal of riparian tree and shrub vegetation that provides cover for a wide variety of  
21 species in addition to the species already discussed. These effects would occur primarily  
22 during construction and replacement of bridges and overpasses. Long-term and indirect  
23 effects would include increased fragmentation of riparian habitat. Indirect effects of  
24 increased noise, light, and human disturbance would reduce available habitat.

1 **Table 3.12-5 Effects to Sensitive Wildlife Habitat from Package A**  
2 **Highway Components**

Component		Affected Sensitive Habitat Area
A-H1	Safety Improvements: SH 1 to SH 14	N/A – No additional lanes are proposed under this component, and long-term effects to sensitive wildlife habitat would be minor (i.e. the same as under the No-Action Alternative).
A-H2	General Purpose Lane Improvements: SH 14 to SH 60	Riparian and wetland habitat at the Cache la Poudre River (1.12 acres) and Big Thompson River (State Wildlife Area) (0.53 acres) would be affected by highway widening and bridge replacement under this component.
A-H3	General Purpose Lane Improvements: SH 60 to E-470	Riparian and wetland habitat at the Little Thompson River (0.28 acres) would be affected by highway widening and bridge replacement under this component. Sensitive riparian habitat also occurs along St. Vrain Creek near I-25, but no changes are proposed to the I-25 bridge over St. Vrain Creek.
A-H4	Structure Upgrades: E-470 to US 36	N/A – No additional lanes are proposed under this component, and long-term effects to sensitive wildlife habitat would be minor (i.e. the same as under the No-Action Alternative).

3 **Other Wildlife** Effects to wildlife from disturbance of degraded habitat in areas such as  
4 highway rights-of-way would include potential direct effects such as loss of habitat—  
5 especially grassland habitat; disruption of migration and other movements, especially along  
6 riparian corridors; and increased mortality from collisions with automobiles. Potential indirect  
7 and long-term effects would include increased habitat fragmentation.

8 **Aquatic Resources.** Package A highway components would directly affect 1.82 acres of  
9 aquatic habitat. Adverse effects on fish and other aquatic organisms during construction  
10 would include temporary loss of habitat during construction of piers, bridges, culverts, and  
11 other work within streams. Increased erosion during construction could result in increased  
12 sediment loads, which would adversely affect aquatic organisms. Working directly in streams  
13 would increase sediment loads, which could change water temperature. Working directly in  
14 streams could also interfere with seasonal movements of sensitive fish species. These  
15 impacts would be short-term and would be mitigated through use of construction best  
16 management practices (BMPs). Increases in traffic could result in increased contaminants in  
17 roadway runoff, including deicer, and would increase the risk of accidental spills of  
18 hazardous materials, which could affect aquatic organisms (refer to **Section 3.7 Water**  
19 **Resources**). Package A highway components include water quality ponds, which would  
20 reduce contaminants in runoff to streams and waterways. Although the ponds would be dry  
21 most of the time, they would provide a net benefit to water quality and for aquatic organisms  
22 by improving water quality downstream. Construction of new culverts, lengthening of existing  
23 culverts, or widening existing bridges would adversely affect fish and other aquatic species  
24 by increasing shading and/or replacing natural streambed with concrete. Stream habitat  
25 would be potentially improved through the replacement of existing culverts with more  
26 numerous culverts or free-spanning bridges. Removal or redesign of drops that act as  
27 barriers would also benefit fish and other aquatic organisms. Replacement of a drop  
28 structure just downstream from I-25 on St. Vrain Creek would improve upstream movement  
29 for small fish.

1 *Package A Transit Components*

2 Overall, effects on wildlife from transit components of Package A would result primarily from  
3 construction of new tracks, replacement and construction of new bridges, and construction of  
4 other transit facilities such as new transit stations, the maintenance facility and water quality  
5 ponds. Types of effects would include habitat loss, habitat fragmentation, disturbance during  
6 construction, and increased mortality from collisions with trains. Most permanent habitat loss  
7 would occur in permanently degraded areas such as rights-of-way adjacent to the existing  
8 tracks, especially for the commuter rail section from Fort Collins to Longmont.

9 The commuter rail segment from Longmont to North Metro (A-T2) would consist of two new  
10 sets of tracks and would be located next to existing highways in areas that are less disturbed  
11 than other portions of the project area. Habitat fragmentation and disruption of movement  
12 corridors resulting from this component (A-T2) would be a major effect to wildlife.

13 Indirect impacts resulting from project induced growth, transit oriented development, and  
14 carpool lots are discussed within **Section 3.1.5.2 Land Use and Zoning Environmental**  
15 *Consequences* of this Draft EIS.

16 Effects to migratory birds, raptors, movement corridors, sensitive wildlife habitat areas, other  
17 wildlife, and aquatic resources from Package A transit components are described below.

18 **Migratory Birds.** Package A transit components would directly affect wetland, riparian, and  
19 grassland habitat for migratory birds. Direct effects to migratory birds could occur from  
20 construction of commuter rail and construction of associated facilities such as transit  
21 stations. Types of direct effects would be the same as for Package A highway components  
22 and would include habitat loss, displacement during construction, increased habitat  
23 fragmentation, and potential destruction of nests during construction. Most effects to  
24 migratory bird habitat would occur in grasslands, but effects would also occur in wetlands  
25 and riparian areas. Impacts to wetlands from the Package A transit components are  
26 quantified in **Section 3.8 Wetlands**. Ground nesting birds would be most affected by the  
27 project. Migratory birds using riparian areas would be temporarily displaced during bridge  
28 widening and replacement activities, and their nests could be disturbed or destroyed. Cliff  
29 swallows would be directly affected by nest destruction or nesting disturbance during bridge  
30 replacement. Indirect effects include increased disturbance due to noise and light from  
31 vehicles, and increased mortality from collisions with vehicles.

32 **Raptors.** Package A transit components potentially affect two existing raptor nests located  
33 during surveys in 2005 and 2006 within 0.25 mile of the edge of the project area. Direct  
34 effects from the loss of railway right-of-way would reduce the available hunting habitat for  
35 many raptors, especially red-tailed hawks and American kestrels. Raptors requiring large  
36 trees for nesting could be affected where trees would be cut down or where trees are located  
37 in close proximity to highway or railway improvements. Indirect effects include increased  
38 mortality resulting from collisions with vehicles as a result of increased traffic at rail stations,  
39 behavioral disturbance induced by encroachment of human activities, within 0.25 to 0.33  
40 mile of nests (CDOW 2002), increased noise, and increased disturbance from vehicle lights.  
41 Some behavioral disturbance could be temporary as raptors adapt to the changed  
42 environment. Most of the proposed transit stations are located in previously disturbed areas;  
43 however, because of the expected induced growth around transit stations, raptors would be  
44 expected to avoid the area.

1 **Big Game and Movement Corridors.** Package A transit components potentially affect the six  
 2 wildlife movement corridors located at Fossil Creek, Big Thompson River, Little Thompson  
 3 River, St. Vrain Creek, Little Dry Creek, and the Ish Reservoir Area (**Table 3.12-6**). Collisions  
 4 with trains have been documented as a source of mortality for wildlife, including mule deer,  
 5 white-tailed deer, and elk (Wells et al., 1999), thus the existing BNSF railway probably results in  
 6 some mortality to wildlife. Currently, the BNSF railway is not a major obstacle to wildlife  
 7 movement due to the sporadic nature of fencing along the alignment, the small size of the  
 8 fences (three strand barbed wire), and relatively low frequency of rail traffic. However, a future  
 9 transit agency could install chain link fences on both sides of the tracks along the entire  
 10 commuter rail corridor for safety and liability purposes. Construction of new retaining walls  
 11 along the rail alignment would also create new barriers to wildlife movement. Where retaining  
 12 walls are present, the fences would be located along the top of the retaining wall.  
 13 Implementation of Package A transit alternatives would create a substantial barrier to wildlife  
 14 movement because of the new fences and retaining walls, and would result in habitat  
 15 fragmentation by isolating patches of wildlife habitat on opposite sides of the rail alignment.  
 16 Retaining walls and fences typically funnel wildlife movements towards existing underpasses  
 17 and crossing sites (Barnum, 2003). Bridges and culverts would thus become much more  
 18 important for wildlife movement after construction of commuter rail. The commuter rail  
 19 components of Package A would have a much greater effect on wildlife movements and would  
 20 result in greater habitat fragmentation than any other components of Packages A and B.

21 Increased traffic as a result of operation of additional bus service along the feeder bus routes  
 22 could result in an increase in wildlife collisions with vehicles. Overall, increased bus traffic  
 23 would not affect big game movement corridors.

**Table 3.12-6 Summary of Effects to Wildlife Movement Corridors from Package A Transit Components**

Component		Effects to Wildlife Movement Corridors
A-T1	Commuter Rail: Fort Collins to Longmont	Construction of new tracks, safety fences, and retaining walls would create substantial barriers to east-west wildlife movements under this component. Culverts and bridges, including those at Fossil Creek and the Big Thompson and Little Thompson rivers would become much more important for wildlife crossings.
A-T2	Commuter Rail: Longmont to North Metro	Construction of new tracks, safety fences, and retaining walls would create substantial barriers to east-west wildlife movements under this component. Culverts and bridges, including SH 119 at St Vrain Creek, the Little Dry Creek crossing of the rail alignment, and other bridges and culverts would become much more important for wildlife movements.
A-T3	Commuter Bus: Greeley to Denver and DIA	No additional lanes are proposed under this component, and long-term effects to wildlife movements from stations and lots associated with commuter bus would be minor.

24 **Sensitive Wildlife Habitat Areas.** Package A transit components potentially affect 0.08 acre  
 25 of sensitive wildlife habitat areas shown in **Table 3.12-7**. Effects to sensitive wildlife habitat  
 26 from the commuter rail components would include removal of riparian tree and shrub  
 27 vegetation that provides cover for a wide variety of species in addition to the species already  
 28 discussed. These effects would occur primarily during construction and replacement of  
 29 bridges. Long-term and indirect effects would include increased fragmentation of riparian  
 30 habitat. Indirect effects of increased noise, light, and human disturbance would be likely to  
 31 reduce effective habitat.

**Table 3.12-7 Summary of Effects to Sensitive Wildlife Habitat from Package A Transit Components**

Component		Affected Sensitive Habitat Area
A-T1	Commuter Rail: Fort Collins to Longmont	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 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 would also be affected by fences and retaining walls which would create a barrier to wildlife movement.
A-T2	Commuter Rail: Longmont to North Metro	Riparian and wetland habitat at St. Vrain Creek (0.08 acre) would be affected by construction of a new bridge crossing.
A-T3	Commuter Bus: Greeley to Denver and DIA	No additional lanes are proposed under this component, and long-term effects to sensitive wildlife habitat would be minor.

1 **Other Wildlife.** Disturbance of degraded habitat in railroad rights-of-way could have effects  
 2 to wildlife. Potential direct effects would include loss of habitat, especially grassland habitat;  
 3 disruption of migration, dispersal of individuals to new territories, and other movements such  
 4 as foraging, especially along riparian corridors; and increased mortality from collisions with  
 5 automobiles or trains. Potential indirect and long-term effects would include increased  
 6 habitat fragmentation.

7 **Aquatic Resources.** No direct effects to aquatic habitat would result from Package A transit  
 8 components because no surface waters would be directly affected by this component.  
 9 Potential indirect adverse effects to fish and other aquatic organisms during construction of  
 10 the commuter rail components would include temporary loss of habitat during construction of  
 11 bridges, culverts, and other work within streams. Increased erosion during construction could  
 12 result in increased sediment loads in streams, which would adversely affect aquatic  
 13 organisms. Wider bridges would cause greater shading of streams, potentially altering  
 14 stream temperature. New stations and parking lots would increase impervious surface area,  
 15 leading to increased runoff to nearby streams. These effects would be short-term in duration  
 16 and would be mitigated through use of construction BMPs (refer to **Section 3.7 Water**  
 17 **Resources**). Package A transit components include construction of water quality ponds to  
 18 reduce contaminants in runoff, which would benefit fish and other aquatic organisms by  
 19 improving water quality downstream. Indirect effects could include interference with seasonal  
 20 movements of aquatic organisms. Construction of new culverts or lengthening of existing  
 21 culverts would adversely affect aquatic species by increasing shading or replacing natural  
 22 streambed with concrete. Replacement of culverts with larger diameter culverts or free  
 23 spanning bridges would potentially benefit fish and other aquatic species over the long term  
 24 by facilitating movements along streams and reducing shading. Removal or redesign of  
 25 drops that act as barriers would also benefit fish and other aquatic organisms.

26 **3.12.3.3 PACKAGE B**

27 Package B includes construction of tolled express lanes on I-25 and implementation of  
 28 bus rapid transit service. Components of Package B are described in detail in **Chapter 2**  
 29 **Alternatives**. **Table 3.12-7** through **Table 3.12-8** summarize environmental consequences of  
 30 Package B to wildlife. **Tables 3.12-9** through **Table 3.12-12** compare impacts associated  
 31 with Packages A and B.



1 **Package B Highway Components**

2 Overall, effects on wildlife and fish from Package B highway components would result  
3 primarily from road widening, and replacement or construction of new bridges. Effects to  
4 wildlife would include habitat loss, habitat fragmentation, disturbance during construction,  
5 and increased risk of mortality from collisions with vehicles. Most permanent habitat loss  
6 would occur in permanently degraded areas such as mowed rights-of-way adjacent to the  
7 existing highway. Effects to migratory birds, raptors, movement corridors, sensitive wildlife  
8 habitat areas, other wildlife, and aquatic resources from Package B highway components  
9 are described below.

10 **Migratory Birds.** Package B highway components would directly affect wetland, riparian,  
11 and grassland habitat for migratory birds. Impacts to riparian areas and wetlands from the  
12 Package B highway components are quantified in **Section 3.8 Wetlands**. Types of effects to  
13 migratory birds from highway widening and construction of associated facilities under  
14 Package B would be the same as effects under Package A.

15 **Raptors.** Package B highway components potentially affect eleven existing raptor nests  
16 located during surveys in 2005 and 2006 within 0.25 mile of the edge of the project area.  
17 The types of effects to raptors from Package B highway components would be the same as  
18 the types of effects from Package A highway components.

19 **Big Game and Movement Corridors.** Package B highway components would potentially  
20 affect five wildlife movement corridors located at the Cache la Poudre River, Big Thompson  
21 River, Little Thompson River, Little Dry Creek, and St. Vrain Creek (**Table 3.12-8**). Package B  
22 highway components would have the same types of effects on wildlife movements as Package  
23 A highway components.

**Table 3.12-8 Summary of Effects to Wildlife Movement Corridors from Package B Highway Components**

Component		Effects to Wildlife Movement Corridors
B-H1	Safety Improvements: SH 1 to SH 14	No additional lanes are proposed in this area, and long-term effects to wildlife movements would be minor.
B-H2	Tolled Express Lanes: SH 14 to SH 60	Construction of additional lanes under this component would increase existing fragmentation of habitat by I-25 by creating greater separation between exiting habitat on either side of the highway. Bridges at the Cache la Poudre and Big Thompson rivers would be replaced with wider structures, and would continue to provide movement corridors beneath the highway.
B-H3	Tolled Express Lanes: SH 60 to E-470	Construction of additional lanes under this component would increase existing fragmentation of habitat by I-25. Bridges at the Little Thompson River and Little Dry Creek would be replaced with wider structures, and would continue to provide movement corridors beneath the highway. The bridge over St. Vrain Creek would not be modified, and would continue to provide an underpass for wildlife.
B-H4	Tolled Express Lanes: E-470 to US 36	Construction of additional lanes under this component 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.

**Sensitive Wildlife Habitat Areas.** Package B highway components potentially affect 2.35 acres of sensitive wildlife habitat areas shown in **Table 3.12-9**. Effects to sensitive wildlife habitat from Package B highway components would include removal of riparian tree and shrub vegetation that provides cover for a wide variety of species in addition to the species already discussed. These effects would occur primarily during construction and replacement of bridges and overpasses. Long-term and indirect effects would include increased fragmentation of riparian habitat. Indirect effects of increased noise, light, and human disturbance would be likely to reduce available habitat.

**Table 3.12-9 Summary of Effects to Sensitive Wildlife Habitat from Package B Highway Components**

Component		Affected Sensitive Habitat Area
B-H1	Safety 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.
B-H2	Tolled Express Lanes: SH 14 to SH 60	Riparian and wetland habitat at the Cache la Poudre River (1.55 acres) and Big Thompson River (State Wildlife Area) (0.52 acre) would be affected by highway widening and bridge replacement under this component.
B-H3	Tolled Express Lanes: SH 60 to E-470	Riparian and wetland habitat at the Little Thompson River (0.28 acre) would be affected by highway widening and bridge replacement under this component. Sensitive riparian habitat also occurs along St. Vrain Creek near I-25, but no changes are proposed to the I-25 bridge over St. Vrain Creek.
B-H4	Tolled Express Lanes: E-470 to US 36	N/A – No effects to sensitive habitat are expected under this component because no sensitive habitat occurs in the project area for this component.

**Other Wildlife.** The types of effects to wildlife from disturbance of degraded habitat in areas such as highway rights-of-way from Package B would be the same as the types of effects from Package A. Potential direct effects of the highway components would include loss of habitat, especially grassland habitat; disruption of migration, dispersal of individuals to new territories, and other movements such as foraging, especially along riparian corridors; and increased mortality from collisions with automobiles. Potential indirect and long-term effects would include increased habitat fragmentation.

**Aquatic Resources.** Package B highway components would directly affect 2.25 acres of aquatic habitat. Types of adverse effects to fish and other aquatic organisms during construction of Package B highway components would be the same as effects from Package A highway components and would include temporary loss of habitat during construction of piers, bridges, culverts, and other work within streams. Types of indirect effects such as increased sediment loads during construction and long-term effects such as interference with seasonal movements would also be to the same as types of effects from Package A highway components. As with Package A highway components, Package B highway components would include water quality ponds which would provide an indirect benefit to aquatic organisms by improving water quality downstream. Effects to aquatic resources from Packages A and B are summarized in **Table 3.12-10**.

**Package B Transit Components**

Effects on wildlife from Package B transit components would result from construction of new bus rapid transit stations and queue jumps on US 85. Types of effects would include habitat loss, disturbance during construction, and possibly increased mortality from collisions with

1 buses. Most permanent habitat loss would occur in permanently degraded areas. Habitat  
2 fragmentation would not be an effect from these components.

3 Effects to migratory birds, raptors, movement corridors, sensitive wildlife habitat areas, other  
4 wildlife, and aquatic resources from Package B transit components are described below.

5 **Migratory Birds.** Package B transit components would directly affect wetland, riparian, and  
6 grassland habitat for migratory birds. Effects to migratory birds from Package B transit  
7 components would include habitat loss and disturbance during construction, if construction  
8 occurs during nesting season.

9 **Raptors.** Effects to raptors from Package B transit components would be limited to potential loss  
10 of foraging habitat and disturbance of foraging activity during construction. No raptor nests were  
11 identified within 0.25 miles of these components during surveys in 2005 and 2006.

12 **Big Game and Movement Corridors.** Package B transit components would not have substantial  
13 effects on wildlife movement corridors. No additional lanes that could fragment habitat or affect  
14 wildlife crossings are planned as part of these components. Proposed bus rapid transit stations  
15 are generally located near existing intersections and would not affect wildlife movement corridors.  
16 Increased traffic as a result of operation of additional bus service could result in a slight increase  
17 in wildlife collisions with vehicles.

18 **Sensitive Wildlife Habitat Areas.** Package B transit components would not have substantial  
19 effects to sensitive wildlife habitat.. None of the proposed bus rapid transit stations are located in  
20 sensitive wildlife habitat such as riparian areas. Operation of additional bus service would affect  
21 sensitive wildlife habitat areas due to a slight increase in noise and increased traffic.

22 **Other Wildlife.** Few substantial effects to other wildlife from the Package B transit components  
23 would be expected because this component does not involve construction of new lanes and  
24 because proposed bus rapid transit stations are generally located near existing intersections.

25 **Aquatic Resources Including Fish.** Adverse effects to fish and other aquatic organisms during  
26 construction of Package B transit components would be minimal. Package B transit components  
27 would not directly affect aquatic habitat.

### 28 3.12.3.4 SUMMARY OF EFFECTS TO WILDLIFE

29  
30 **Table 3.12-10** summarizes direct effects to aquatic habitat (including fish) by component.

31 **Table 3.12-11** summarizes effects to raptor nests within 0.25 mile of the project area by  
32 component. Raptors may nest in favorable locations year after year, may use different nests  
33 in alternate years, or may move to a new nest location in response to changes in the  
34 environment. The actual number of nests is likely to be different at the time of construction,  
35 but these numbers are representative of the effects that could occur.

1 **Table 3.12-10 Summary of Effects to Aquatic Habitat (Including Fish) by Component**

Component		Affected Habitat (acres)	Component		Affected Habitat (acres)
<b>Package A Highway Components</b>			<b>Package B Highway Components</b>		
AH-1	Safety Improvements: SH 1 to SH 14	0	BH-1	Safety Improvements: SH 1 to SH 14	0
AH-2	General Purpose Improvements: SH 14 to SH 60	1.42	BH-2	Tolled Express Lanes: SH 14 to SH 60	1.75
AH-3	General Purpose Improvements: SH 60 to E-470	0.40	BH-3	Tolled Express Lanes: SH 60 to E-470	0.41
AH-4	Structure Upgrades: E-470 to US 36	0	BH-4	Tolled Express Lanes: E-470 to US 36	0.09
<b>Total Package A Highway:</b>		<b>1.82</b>	<b>Total Package B Highway:</b>		<b>2.25</b>
<b>Package A Transit Components</b>			<b>Package B Transit Components</b>		
A-T1	Commuter Rail: Fort Collins to Longmont	0	B-T1	BRT: Fort Collins/Greeley to Denver;	0
A-T2	Commuter Rail: Longmont to North Metro	0	B-T2	BRT: Fort Collins to DIA	0
AT-3/ AT-4	Commuter Bus: Greeley to Denver and DIA	0			
<b>Total Package A Transit:</b>		<b>0</b>	<b>Total Package B Transit:</b>		<b>0</b>
<b>Total Package A:</b>		<b>1.82</b>	<b>Total Package B:</b>		<b>2.25</b>

2  
3  
4 **Table 3.12-11 Summary of Effects to Raptor Nests within 0.25 Mile of Project Area by Component**

Component		Number of Nests	Component		Number of Nests
<b>Package A Highway Components</b>			<b>Package B Highway Components</b>		
AH-1	Safety Improvements: SH 1 to SH 14	0	BH-1	Safety Improvements: SH 1 to SH 14	0
AH-2	General Purpose Improvements: SH 14 to SH 60	0	BH-2	Tolled Express Lanes: SH 14 to SH 60	0
AH-3	General Purpose Improvements: SH 60 to E-470	6	BH-3	Tolled Express Lanes: SH 60 to E-470	8
AH-4	Structure Upgrades: E-470 to US 36	1	BH-4	Tolled Express Lanes: E 470 to US 36	3
<b>Total Package A Highway:</b>		<b>7</b>	<b>Total Package B Highway:</b>		<b>11</b>
<b>Package A Transit Components</b>			<b>Package B Transit Components</b>		
A-T1	Commuter Rail: Fort Collins to Longmont	1	B-T1	BRT: Fort Collins/Greeley to Denver;	0
A-T2	Commuter Rail: Longmont to North Metro	1	B-T2	BRT: Fort Collins to DIA	0
AT-3/ AT-4	Commuter Bus: Greeley to Denver and DIA	0			
<b>Total Package A Transit:</b>		<b>2</b>	<b>Total Package B Transit:</b>		<b>0</b>
<b>Total Package A:</b>		<b>9</b>	<b>Total Package B:</b>		<b>11</b>

1 **Table 3.12-12** summarizes the effects to wildlife habitat by component, including acres of  
2 migratory bird habitat, number of raptor nests, numbers of movement corridors, acres of  
3 other sensitive habitat, and acres of other aquatic habitat.

4 **Table 3.12-12 Overall Summary of Effects to Wildlife Habitat by Component**

Component	Number of Raptor Nests	Number of Movement Corridors	Sensitive Wildlife Habitat (acres)	Aquatic Habitat (acres)
Package A Highway Components	7	4	1.93	1.82
Package A Transit Components	2	6	0.08	0
<b>Total Package A:</b>	<b>9</b>	<b>10</b>	<b>2.01</b>	<b>1.82</b>
Package B Highway Components	11	5	2.35	2.25
Package B Transit Components	0	0	0	0
<b>Total Package B:</b>	<b>11</b>	<b>5</b>	<b>2.35</b>	<b>2.25</b>

5 **3.12.4 Mitigation Measures**

6 This section describes recommendations for reducing or mitigating proposed project impacts  
7 to wildlife, and presents possible mitigation opportunities. Whenever possible, mitigation  
8 measures to reduce or avoid impacts to wildlife and fish have been incorporated into the  
9 build packages, including avoiding sensitive habitat, using BMPs to control erosion and  
10 drainage improvements, and promptly revegetating disturbed areas.

11 **3.12.4.1 NO-ACTION ALTERNATIVE**

12 No additional mitigation measures will be proposed under the No-Action Alternative.

13 **3.12.4.2 PACKAGES A AND B**

14 *Migratory Birds*

15 CDOT will implement the following mitigation measures for projects that will have an impact  
16 to migratory birds:

- 17 ▶ Tree trimming and/or removal activities will be completed before birds begin to nest or  
18 after the young have fledged. In Colorado, most nesting and rearing activities occur  
19 between April 1 and August 31. However, since some birds nest as early as February, a  
20 nesting bird survey will be conducted by a biologist before any tree trimming or removal  
21 activities begin.
- 22 ▶ Bridge or box culvert work that may disturb nesting birds will be completed before birds  
23 begin to nest or after the young have fledged. No bridge or box culvert work will take  
24 place between April 1 and August 31. If work activities are planned between these  
25 dates, nests will be removed (before nesting begins) and appropriate measures taken to  
26 assure no new nests are constructed.

1 ▶ Clearing and grubbing of vegetation that may disturb ground nesting birds will be  
2 completed before birds begin to nest or after the young have fledged. If work activities  
3 are planned between April 1 and August 31, vegetation will be removed and/or trimmed  
4 to a height of six inches or less prior to April 1. Once vegetation has been removed  
5 and/or trimmed, appropriate measures, i.e. repeated mowing/trimming, will be  
6 implemented to assure vegetation does not grow more than six inches.

### 7 *Raptors*

8 CDOW has developed recommended buffer zones and seasonal restrictions for new surface  
9 occupancy within certain distances of nest sites of several raptor species. Surface  
10 occupancy is defined as human-occupied buildings and other structures such as oil and gas  
11 wells, roads, railroad tracks, or trails. The USFWS typically considers that implementation of  
12 the CDOW buffers and seasonal restrictions fulfill compliance requirements of the Migratory  
13 Bird Treaty Act for raptors.

14 A raptor nest survey will be conducted prior to project construction to identify raptor nests  
15 and nesting activity in the vicinity of the proposed project. If an active raptor nest is found on  
16 site, the recommended buffers and seasonal restrictions recommended by the CDOW  
17 (CDOW 2002) for raptors will be established during construction to avoid nest abandonment.

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

### 23 *Big Game and Movement Corridors*

24 Impacts to big game will be minimized through construction of crossing structures that will be  
25 designed to maintain wildlife movement corridors. In areas identified as important movement  
26 corridors, the following measures will be recommended. These mitigation measures may not  
27 be feasible at all wildlife crossing areas due to cost or engineering issues. The locations  
28 where these mitigation measures will be implemented will be identified as the preferred  
29 alternative is identified and final design is undertaken. To maximize use of movement  
30 corridors by wildlife, bridge spans and culverts will have the following features:

- 31 ▶ A minimum clearance of 10 feet and width of 20 feet for deer (Ruediger and DiGiorgio,  
32 2007). Crossing structures sized for deer will be adequate for most common wildlife. The  
33 recommended minimum culvert diameter is 48 inches for medium-sized carnivores and  
34 36 inches for small carnivores (Ruediger and DiGiorgio 2007).
- 35 ▶ A minimum “openness ratio” of 0.75. The “openness ratio” is defined as the height of the  
36 structure multiplied by the structure width and divided by the structure length, measured  
37 in meters. A minimum openness ratio of 2.0 is recommended by some researchers  
38 (Reudiger and DiGiorgio 2007).
- 39 ▶ Shrubs and vegetative cover placed at bridge underpass openings to attract wildlife and  
40 provide a “funnel effect”.
- 41 ▶ For structures that periodically convey water, ledges or shelves to provide passage  
42 alternatives during high water.
- 43 ▶ To avoid human disturbance to wildlife, trails will not be placed near wildlife crossing  
44 structures.

1 The wildlife corridor near Ish Reservoir does not occur along a drainage. The proposed rail  
2 profile in the vicinity of this wildlife crossing follows existing grades and there are no  
3 proposed retaining walls at this location. The initial design recommendation to a regional  
4 transit agency is to omit the perimeter fencing for the appropriate segment necessary to  
5 maintain the wildlife corridor. If, during final design, it is determined that it will not be  
6 possible to omit the perimeter fencing, the design team will investigate profile adjustments to  
7 determine the feasibility of establishing a box culvert wildlife crossing underpass of suitable  
8 size and length to accommodate the range of wildlife encountered in this corridor, or use of  
9 fencing that is not a barrier to wildlife.

10 Other recommended design elements include:

- 11 ▶ Avoiding the placement of lighting near the crossing structures
- 12 ▶ Avoid attracting wildlife to the right-of-way by keeping roadside vegetation height to a  
13 minimum
- 14 ▶ Mitigating for traffic noise

15 Use of these design elements will be specified where appropriate during final design. Along  
16 the commuter rail corridor, CDOT will seek permission from the regional transit authority to  
17 minimize the use of chain link fencing in areas that are heavily used by wildlife. If a fence is  
18 constructed, these will be of a type that is not a barrier to wildlife structures such as one-way  
19 ramps will be placed at regular intervals along the corridor to allow animals that may get  
20 inside the fence to exit the highway corridor. Measures will be taken to ensure that fences  
21 are maintained.

### 22 *Sensitive Wildlife Habitat Areas*

23 Impacts to other sensitive wildlife habitat areas have been avoided and minimized to the  
24 greatest extent possible. Proposed mitigation measures for wetlands and riparian areas will  
25 mitigate for impacts to sensitive wildlife habitat, which tends to be located along streams and  
26 rivers (refer to **Section 3.8 Wetlands**). Mitigation measures for big game and wildlife  
27 crossings will also benefit these areas.

### 28 *Other Wildlife*

29 Many other wildlife species, such as small and medium sized mammals, reptiles, and  
30 amphibians use the same migration corridors used by larger animals, and will benefit from  
31 mitigation measures for wildlife movement corridors described above. Effects to other  
32 wildlife from impacts to grasslands will be mitigated by mitigation measures described for  
33 vegetation. Other wildlife habitat areas are generally located along major drainageways.  
34 Mitigation measures for impacts to vegetation, wetlands, and Preble's meadow jumping  
35 mouse habitat will also benefit these areas.

### 36 *Aquatic Resources (Including Fish)*

37 The project will comply with Colorado SB40, which requires any agency of the State of  
38 Colorado to obtain wildlife certification from CDOW when the agency plans construction in  
39 any stream or its bank or tributaries. An application for SB40 wildlife certification would be  
40 submitted to CDOW. CDOW will review the plans to ensure that the project adequately

- 1 protects fish and wildlife resources, and will provide recommendations if the proposed  
2 project will adversely affect a stream or its riparian corridor.
- 3 To offset temporary impacts to aquatic species from habitat disturbance, aquatic habitats will  
4 be restored after construction activities have ceased. The following design measures will be  
5 implemented to mitigate potential impacts to aquatic species, including native fish:
- 6 ▶ Riffle and pool complexes will be maintained and/or created.
  - 7 ▶ Natural stream bottoms will be maintained.
  - 8 ▶ Culverts will be partially buried and the bottom will be covered with gravel/sand and have  
9 a low gradient.
  - 10 ▶ Culverts to be replaced will be replaced with one of equal or greater size.
  - 11 ▶ Culverts will not have grates, impact dissipaters, or any other features that will impede  
12 fish movement.
  - 13 ▶ To avoid erosion induced siltation and sedimentation, sediment/erosion control BMPs  
14 shall be placed during each phase of construction. Upon completion of slope, seeding in  
15 combination with mulch/mulch tackifier or blanket shall occur within the limits set in  
16 Section 208 of CDOT specifications.
  - 17 ▶ Access points to streams during construction will be limited to minimize degradation of  
18 the banks.
  - 19 ▶ No new fish passage barriers will be created.
  - 20 ▶ Existing drop structures that create a barrier to fish movements will be removed or  
21 redesigned where possible. An example is the drop structure located east of the frontage  
22 road at I-25 and St. Vrain Creek, which is planned to be modified to facilitate fish  
23 passage as part of this project.
- 24 CDOT's water quality BMPs will be applied, and will include the installation of mechanisms to  
25 collect, contain, and/or treat roadway run-off. Mitigation measures designed to offset impacts  
26 to wetlands, Ute ladies'-tresses orchid, and Preble's meadow jumping mouse, including  
27 habitat replacement/enhancement and the replacement of existing culverts with larger or  
28 more numerous culverts and/or free-spanning bridges, will also improve fish habitat.