

1 horned owl (*Bubo virginianus*) and Swainson's
 2 hawk (*Buteo swainsoni*) also were observed.
 3 Large, mature cottonwood trees near the High
 4 Line Canal and South Platte River are known to
 5 be winter perch sites for bald eagles (*Haliaeetus*
 6 *leucocephalus*), while the nearby grasslands
 7 provide foraging habitat.

8
 9 The ferruginous hawk (*Buteo regalis*) is the
 10 largest hawk in North America and is also listed
 11 as a state species of special concern. This species
 12 inhabits open prairie and desert habitats and is
 13 strongly associated with primary prey species
 14 such as ground squirrels and jackrabbits.
 15 Ferruginous hawks are relatively common
 16 winter residents in eastern Colorado, particu-
 17 larly in association with the black-tailed prairie
 18 dog. This species has been known to breed in
 19 scattered locations in eastern Colorado but not
 20 near the C-470 project area. Ferruginous hawks
 21 may occasionally forage within or near C-470,
 22 especially in winter, but are unlikely to nest in
 23 the project area.

24 **Other Birds**

25 Most wild birds commonly found in the U.S. are
 26 protected by the Migratory Bird Treaty Act
 27 (MBTA). This act protects migratory birds and
 28 active nests. A variety of bird species occur
 29 within the C-470 project area. Mallards (*Anas*
 30 *platyrhynchos*), Canada geese (*Branta canadensis*),
 31 and other waterfowl are often found in and
 32 around open water habitat. Wetland bird species
 33 include red-winged blackbird (*Agelaius*
 34 *phoeniceus*) and song sparrow (*Melospiza melodia*).
 35 Common grassland birds include the western
 36 meadowlark (*Sturnella neglecta*), vesper sparrow
 37 (*Pooecetes gramineus*) and mourning dove
 38 (*Zenaidura macroura*). Cliff swallows (*Petrochelidon*
 39 *pyrrhonota*) commonly nest beneath bridges and
 40 other overhanging structures.

41 **Aquatic Resources**

42
 43 The aquatic habitats within the project area
 44 include the South Platte River and its perennial
 45 tributaries. Aquatic species are limited in inter-
 46 mittent drainages and ditches by low and
 47 irregular flows. Common aquatic macroinverte-

48
 49 brates (aquatic insects) likely include blackflies
 50 (family *Simuliidae*), midges (family *Chironomidae*),
 51 mayflies (order *Ephemeroptera*), caddisflies (order
 52 *Trichoptera*), craneflies (family *Tipulidae*),
 53 damselfly larvae (family *Coenagrionidae*), as well
 54 as snails (class *Gastropoda*) and amphipods (order
 55 *Amphipoda*) (small freshwater crustacean).
 56
 57

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 59 Large macroinvertebrates such as crayfish and
 60 snails are potentially important prey for fish,
 61 waterfowl, and mammal species. The South
 62 Platte River and its perennial tributaries contain
 63 a variety of stream habitats, varying amounts of
 64 habitat modification, and seasonal water flows.
 65 Aquatic habitat in the project area has been
 66 severely affected by human modifications
 67 including Chatfield Reservoir Dam, channel-
 68 ization, impassable drop structures, and reduced
 69 riparian vegetation.
 70

71 In 2003, the CDOW sampled fish in the South
 72 Platte River just downstream of the existing
 73 C-470 bridge and drop structure. The most
 74 common species captured were white sucker
 75 (*Catostomus commersoni*) and johnny darter
 76 (*Etheostoma nigrum*). Other species captured
 77 included longnose sucker (*Catostomus catos-*
 78 *tomus*), largemouth bass (*Micropterus salmoides*),
 79 longnose dace (*Rhinichthys cataractae*), mosqui-
 80 tofish (*Gambusia affinis*), rainbow trout
 81 (*Oncorhynchus mykiss*), smallmouth bass
 82 (*Micropterus dolomieu*), and walleye (*Stizostedion*
 83 *vitreum*).
 84

85 **3.4.1.2 Environmental Consequences** 86 **No-Action Alternative**

87 The No-Action Alternative would have no direct
 88 effect on wildlife resources in the project area.
 89 Indirect effects could result as traffic volumes
 90 increase, making movement across the highway
 91 even more difficult. Any adverse effects on
 92 aquatic resources from stormwater runoff would
 93 continue at historical levels.
 94

95 **General Purpose Lanes Alternative**

96 Because of the current levels of disturbance
 97 associated with urban development and the
 98 existing highway, substantial existing barriers to
 99

wildlife movement already exist in the project area. Additional travel lanes and a concrete barrier separating directional traffic flow in the GPL Alternative would increase the difficulty of wildlife movement across the highway, but would not appreciably change wildlife movement. While the GPL Alternative would result in lengthening existing culverts and bridges, it would not eliminate any existing wildlife crossings. The reconstruction of the existing bridge over the South Platte River, as part of the GPL Alternative, would benefit a variety of wildlife species by improving its capacity for wildlife movement and enhancing connections between South Platte Park and Chatfield State Park.

MULE DEER AND ELK. The GPL Alternative would result in the minimal loss of marginal foraging habitat areas for mule deer or elk immediately adjacent to the roadway. Increased noise and traffic volumes would also result in creating a larger area around the highway that mule deer and elk would likely avoid, which would reduce the amount of usable habitat. Reconstruction of the existing bridge over the South Platte River would benefit these ungulates by improving the movement corridor between Chatfield State Park and South Platte Park. In other areas of the Corridor, ungulates crossing at-grade would cause safety concerns and potentially increase the number of wildlife vehicle collisions.

BLACK-TAILED PRAIRIE DOG. Many of the prairie dog colonies in the project area are located within or adjacent to the existing ROW. The GPL Alternative would impact 12.5 acres of prairie dog towns. Of these 12.5 acres, 0.3 acre is located in Arapahoe County, 6.2 acres in Douglas County, and 6.0 acres in Jefferson County. These effects would be most substantial between Santa Fe Drive and Wadsworth Boulevard.

RAPTORS. Of the six active red-tailed hawk nests in the project area, four are within ½

mile of C-470. These four nests include two in the southeast corner of the Santa Fe Drive interchange, one along Big Dry Creek on the north side of C-470, and one along Willow Creek on the south side of C-470. While construction activity will not require removal of any of these nests, nesting behavior and productivity may be affected due to the proximity to the limits of construction.

Direct effects to raptors in the project area would include a minor reduction in the foraging habitat in riparian areas immediately adjacent to the highway. The previously mentioned effects to nearby prairie dog towns that support habitat for small mammals such as mice and voles would represent a small reduction in prey for raptors in this area. Temporary behavioral disturbance including changes in foraging or breeding behaviors may also occur during construction activity. However, it is likely that the birds would resume their normal behaviors following construction, having acclimated to the changed environment, and continue to inhabit the area near the highway.

OTHER BIRDS. Bird nests are likely to occur in a variety of habitat types along C-470. Any direct effects to undeveloped habitat areas within the project area would likely impact the birds that depend on those areas for nesting and foraging. The GPL Alternative would reduce low-quality nesting and foraging habitat such as mowed areas of the median and within the existing CDOT ROW. Additional habitat loss would occur where ROW acquisition is necessary on undeveloped parcels along the existing highway.

Cliff swallows are known to nest under the C-470 bridges over Willow Creek and the South Platte River, and may also nest in other locations. These nests would be disturbed by construction of the GPL Alternative, and bridge reconstruction would

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require their removal. These effects may adversely affect individual birds and colonies of birds, but would not affect the long-term viability of cliff swallow populations in the area. Under the MBTA, removal of these nests must occur when they are inactive, typically between October and March. If the timing of nest removal is not practicable for the construction schedule, efforts would be made to prevent birds from nesting.

AQUATIC RESOURCES. Both alternatives would likely result in temporary direct effects on aquatic resources during work on culverts or bridge crossings of perennial streams. Breeding and foraging habitat would be affected to a minor extent during construction near culverts and bridges. Downstream turbidity (suspended sediment) would be increased during construction, which could affect downstream fish and invertebrates.

The long-term effect on aquatic resources resulting from both alternatives may be beneficial because the final design will include effective BMPs for improving the quality of stormwater runoff.

Express Lanes Alternative (Preferred Alternative)

The EL Alternative is considered to have similar effects to wildlife habitat as compared to the GPL Alternative. One additional impact associated with the EL Alternative is the added barrier to wildlife movement created by multiple concrete barriers separating the general purpose lanes from the express lanes. These barriers could be impassable to small mammals. Larger mammals could jump over the barriers. However, due to the volume and traffic speeds on the highway, any wildlife attempting to cross the highway would not likely make it across safely. The reconstruction of the bridge over the South Platte River as part of the EL Alternative would increase the capacity for wildlife movement under C-470.

The addition of travel lanes would impact 14.3 acres of black-tailed prairie dog towns, with 0.3 acre in Arapahoe County, 8.1 acres in Douglas County, and 5.9 acres in Jefferson County.

The EL Alternative may temporarily change raptor movement, foraging, or perching behaviors during construction. Cliff swallows known to nest under existing bridges would also be impacted where bridge reconstruction occurs.

Adverse effects associated with the EL Alternative, like those for the GPL Alternative, would increase the effects the existing highway has on wildlife and would result in loss of breeding and foraging habitat. Additional concrete barriers used to separate the express lane facility from the general purpose lanes would exacerbate the safety concern due to vehicle collisions with wildlife attempting to cross the highway at-grade.

3.4.1.3 Mitigation

Although concrete barriers used to separate travel lanes would impede wildlife movement across C-470, improvements to the wildlife underpass at the South Platte River would have a positive overall effect to wildlife movement in the project area.

The most important wildlife movement corridor in the project area is along the South Platte River. Both the GPL and EL Alternatives include the reconstruction of the bridge over the South Platte River. The reconstructed bridge would be wider and taller than the existing bridge and would better accommodate wildlife movement between Chatfield State Park and South Platte Park. A natural substrate would also be provided on the east side of the South Platte River to encourage wildlife movement. Although this corridor would be disrupted during construction, the post-construction condition would be an improved wildlife crossing that would improve the wildlife corridor through this area. Post construction re-vegetation near the bridge would include native riparian shrubs such as skunk brush and willow in attempt to attract ungulates

to cross under C-470. The existing chain link fence that extends from the South Platte River along the north and south side of C-470 would also be replaced to serve as deer fence, directing large mammals to safely cross under C-470 at the South Platte River. Any culverts required to be replaced as part of this project would be maintained at current size or upgraded to a minimum of 24 inches, subject to drainage restrictions, to maintain connectivity across C-470 for small and medium sized mammals.

In addition to improving wildlife movement at the South Platte River, implementing the water quality BMPs outlined in **Section 3.3.4**, would improve wildlife habitat in riparian and aquatic areas.

Raptor Nests

A survey for nesting raptors within one-third mile of the project area would be performed to ensure that nesting raptors would not be disturbed by construction. For the red-tailed hawk, CDOW recommends no surface occupancy from February 15 to July 15 within a one-third mile radius of nest sites and associated alternate nests. The CDOW has developed recommended buffer zones and seasonal restrictions for new surface occupancy within certain distances of nest sites of several raptor species, including the red-tailed hawk. Surface occupancy is defined as human-occupied buildings and other structures such as oil and gas wells, roads, railroad tracks, trails, etc. The USFWS typically considers implementation of the CDOW buffers and seasonal restrictions as adequately complying with the MBTA.

If restricting construction within nest buffers during the breeding season is not practicable, prior to construction CDOT would coordinate with USFWS and CDOW to develop a mitigation strategy to offset potential lost productivity. CDOT would construct new nests in areas that are protected from development and have an adequate prey base. It is possible that nesting pairs may not be adversely affected by construction activity encroaching within nest

buffers, and would successfully fledge offspring if construction visibility and noise were screened by vegetation or topography. CDOT would monitor nests to determine if construction effects were more than anticipated and would work with USFWS and CDOW to modify the nest mitigation plan, if appropriate.

Other Bird Nests

In order to comply with the MBTA, prior to construction CDOT would survey areas proposed for disturbance for the presence of migratory bird nests. If nests are present, CDOT would avoid disturbing active nests by removing trees and shrubs during the non-nesting season and timing construction activity to avoid active nests during the nesting season.

Bird nests found under existing bridge structures would be removed after August 15, but prior to April 25 in compliance with the MBTA. To prevent new nests from being constructed, netting would be installed under bridges and culverts during the non-breeding season or new nests under construction would be visited every three to four days to prevent new nests from being completed, unless project construction activity is continuous on a daily basis during active nesting season.

Prairie Dog Colonies

Prairie dog colonies in the areas that would be impacted by either of the two action alternatives would be re-surveyed for any changes in prairie dog activity. Construction would be phased to avoid and minimize direct effects to occupied prairie dog colonies. In areas where avoidance is not possible, CDOT would follow the *CDOT Impacted Black-tailed Prairie Dog Policy* (March 2005). This policy consists of a series of steps which include avoiding and minimizing effects, relocating affected individuals if possible, and coordinating with CDOW on approved removal methods if relocation is not feasible. Some prairie dogs would be relocated to CDOT ROW at C-470 and Quincy Avenue, subject to CDOW guidelines. Additional prairie dogs would be relocated to South Platte Park.

In compliance with 21 CFR 1240, the Food and Drug Administration's November 2003 Final Interim Rule addressing the spread of monkeypox, CDOT would notify the FDA prior to transporting any live or dead prairie dogs.

For those colonies that would be only partially affected, prior to construction a visual barrier would be installed between the burrows that would be impacted and undisturbed portions of the colony. Following barrier installation, burrow openings in the construction area would be collapsed. The visual barrier and collapsed burrows encourage abandonment of burrows that would be affected, which would reduce the likelihood of direct effects to individual prairie dogs.

3.4.2 Federal and State Threatened and Endangered Species

Federally threatened and endangered species are protected under the Endangered Species Act (ESA) of 1973 as amended. Adverse effects to a federally listed species or its designated critical habitat resulting from a federal action requires

consultation with the USFWS as required by the ESA. There are no federal regulations that require consultation for effects to candidate species, but if the species were to become listed during construction, consultation with the USFWS would be required. Because the status of candidate species may change during a study, the FHWA and CDOT routinely address candidate species during the environmental clearance process. A detailed analysis of species habitat and potential occurrence within the project area is in the *Threatened and Endangered Species Technical Report* (March 2005). Of the potential species analyzed in this section only the bald eagle and burrowing owl are known to be present in the project area.

3.4.2.1 Affected Environment

The USFWS and CDOW were contacted for a list of federal threatened or endangered species that may occur within the project area and habitat coverages. Study biologists then assessed the project area for the presence of habitat for listed species. **Table 3-42** lists federal threatened and endangered species that could occur in the

Table 3-42
Federally Listed Species Potentially Occurring in the Project Area

Common Name	Scientific Name	Known to Occur in the Project area	Federal Status
Preble's meadow jumping mouse	<i>Zapus hudsonius preblei</i>	Nearest occupied habitat is approximately 1.5 miles from C-470	Threatened
Ute ladies'-tresses orchid	<i>Spiranthes diluvialis</i>	No	Threatened
Colorado butterfly plant	<i>Gaura neomexicana</i> ssp. <i>coloradensis</i>	No	Threatened
Bald eagle	<i>Haliaeetus leucocephalus</i>	Occasional Occurrence	Threatened
Whooping crane*	<i>Grus americana</i>	No	Endangered
Least tern*	<i>Sterna antillarum</i>	No	Endangered
Eskimo curlew*	<i>Numenius borealis</i>	No	Endangered
Piping plover*	<i>Charadrius melodus</i>	No	Threatened
Pallid sturgeon*	<i>Scaphirhynchus albus</i>	No	Endangered
Western prairie fringed orchid*	<i>Platanthera praeclara</i>	No	Threatened

* Federally-listed species affected by depletions to the South Platte River system

project area, as provided by USFWS. Habitat for these species identified in the project area is shown in **Figure 3-38**.

Included in **Table 3-42** are species that could potentially be affected by new or continued water depletions to the South Platte River system. Species on this list could be adversely affected by water depletions associated with a variety of project elements including detention ponds and dust abatement.

Preble's Meadow Jumping Mouse

The Preble's meadow jumping mouse (Preble's) is listed as threatened under the ESA. Typically, Preble's is located in low undergrowth consisting of grasses and forbs, in open wet meadows, riparian corridors near forests, or where tall shrubs and low trees provide adequate cover. Along Colorado's Front Range, Preble's is found below 7,600 feet in elevation, generally in lowlands with medium to high moisture along permanent or intermittent streams and irrigation canals.

In 2000, the USFWS established the Preble's Meadow Jumping Mouse Block Clearance Zone. Based on repeated habitat assessment and survey data, the USFWS has assumed an absence of Preble's within this zone. As such, requirements for habitat assessments and trapping surveys in potentially suitable habitat for compliance with the ESA are suspended in this area.

With the exception of the South Platte River floodplain near Santa Fe Drive, the north side of the project area is included in the Preble's Meadow Jumping Mouse Block Clearance Zone for the Denver metro area. Also included is the south side of the project area between I-25 and Santa Fe Drive, leaving Massey Draw south of C-470 and all reaches of the South Platte River within the project area as the only drainages located outside of the Block Clearance Zone. These areas were assessed for the presence of potential habitat and for the likelihood of the presence of Preble's. No Preble's habitat is

present on the reach of Massey Draw in the project area south of the Block Clearance Zone due to lack of shrubby, riparian vegetation, and isolation by Chatfield Reservoir from known Preble's populations.

One area of higher-quality potential habitat is the large, mature riparian community on the South Platte River that runs from downstream of Chatfield Reservoir Dam to the north end of South Platte Park. The area contains habitat that may be capable of acting as a movement corridor supporting Preble's. Although shrubby riparian vegetation present along the South Platte River north of Chatfield Dam could support Preble's, disturbance, isolation from known Preble's populations, and several negative presence/absence surveys in and near the project area indicate the likelihood of Preble's being present is low. Based on the disturbance, isolation, and past negative presence/absence surveys, the USFWS has determined that the likelihood of Preble's being present is low enough that a new presence/absence survey would not be required prior to construction of either the GPL or EL Alternatives.

Ute Ladies'-Tresses Orchid

The Ute ladies'-tresses orchid is federally listed as threatened. It occurs at elevations below 6,500 feet in moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes. Generally, the vegetative cover is relatively open while dense, overgrown sites are not conducive to orchid establishment. Where the orchid is found, soils are typically alluvial deposits of sandy, gravelly material that are saturated to within 18 inches of the surface for at least part of the growing season. Alkaline or clay soils and regularly disturbed area such as roadside ditches typically preclude presence of the orchid.

Wetlands in the project area meeting USFWS guidelines were assessed for potential orchid habitat during field surveys in August 2004. With the exception of the wetlands associated with the South Platte River, none were deter-