

I-76 & Bridge Street INTERCHANGE



Biological Resources

Technical Report

Table of contents

1.	Introduction	1
1.1	Biological Resources.....	1
1.2	Project Location	1
1.3	Project Alternatives	3
1.4	Regulatory Environment.....	5
2.	Affected Environment	6
2.1	Data Collection Methodology	6
2.2	Current Environmental Conditions	6
3.	Impact Analysis	12
3.1	Impacts Assessment Methodology	12
3.2	No-Action Alternative	12
3.3	Action Alternatives	12
4.	Mitigation	13
4.1	Noxious Weeds	14
4.2	Federally Listed Threatened and Endangered Species.....	14
4.3	Migratory Birds	14
5.	References	15

Appendices

- Appendix A: Photographic Log
- Appendix B: USFWS IPaC List
- Appendix C: CDOW Raptor Guidelines

Exhibits

Exhibit 1-1	Project Location Map.....	2
Exhibit 1-2	Preferred Alternative: Two-Roundabout Interchange.....	3
Exhibit 1-3	Alternative 2: Four-Roundabout Interchange	4
Exhibit 1-4	Alternative 3: Three-Roundabout Interchange	5
Exhibit 2-1	Biological Resources Map	7
Exhibit 2-2	Noxious Weeds Identified in the Project Area	8
Exhibit 2-3	Federally Listed Threatened and Endangered Species and Their Potential to Occur in the Project Area	8
Exhibit 2-4	State-Listed Threatened and Endangered Species and Their Potential to Occur in the Project Area	10

List of acronyms and abbreviations

BMP	Best Management Practice
BO	Biological Opinion
Brighton	City of Brighton
CDOA	Colorado Department of Agriculture
CDOT	Colorado Department of Transportation
CNHP	Colorado Natural Heritage Program
CPW	Colorado Parks and Wildlife
CRS	Colorado Revised Statutes
CSP	Central Shortgrass Prairie
CWA	Clean Water Act
EA	Environmental Assessment
EO	Executive Order
ESA	United States Endangered Species Act
FHWA	Federal Highway Administration
GPS	Global positioning system
LOS	Level of service
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
PBA	Programmatic Biological Assessment
ROW	Right of way
SPWRAP	South Platte Water Related Activities Program
USFWS	U.S. Fish and Wildlife Service

1. Introduction

The I-76 and Bridge Street Interchange Environmental Assessment (EA) is a joint effort between the City of Brighton (Brighton), the Federal Highway Administration (FHWA), and the Colorado Department of Transportation (CDOT). This EA will identify potential impacts of the proposed interchange on the built and natural environment.

1.1 Biological Resources

This technical report has been prepared to address potential project impacts to biological resources, including habitat and vegetation; noxious weeds; federally and state-listed threatened, endangered, proposed, and candidate species; sensitive species; migratory birds; and Senate Bill 40 resources.

Waters of the U.S, including wetlands, are addressed in *the I-76 and Bridge Street Environmental Assessment Wetland Finding Report*. Impacts are anticipated to be covered under a Nationwide Permit 14 (NWP 14) for Linear Transportation projects under Section 404 of the Clean Water Act (CWA).

1.2 Project Location

The proposed project is located at the I-76 and Bridge Street intersection within the City of Brighton, Colorado (see Exhibit 1-1), where Bridge Street passes over I-76 with no direct connection. The approximate geographical location of the project is centered at decimal degree coordinates (North American Datum [NAD] 83) latitude 39.986913°, longitude -104.735925°. The project is located in parts of Sections 2 and 11, Township 1 South, Range 65 West of the 6th Principal Meridian on the United States Geological Survey (USGS) Mile High Lakes, Colorado 7.5-Minute Quadrangle (USGS, 1994). The elevation of the site is approximately 5,060 feet above mean sea level (msl).

Exhibit 1-1 Project Location Map



1.3 Project Alternatives

1.3.1 No-Action Alternative

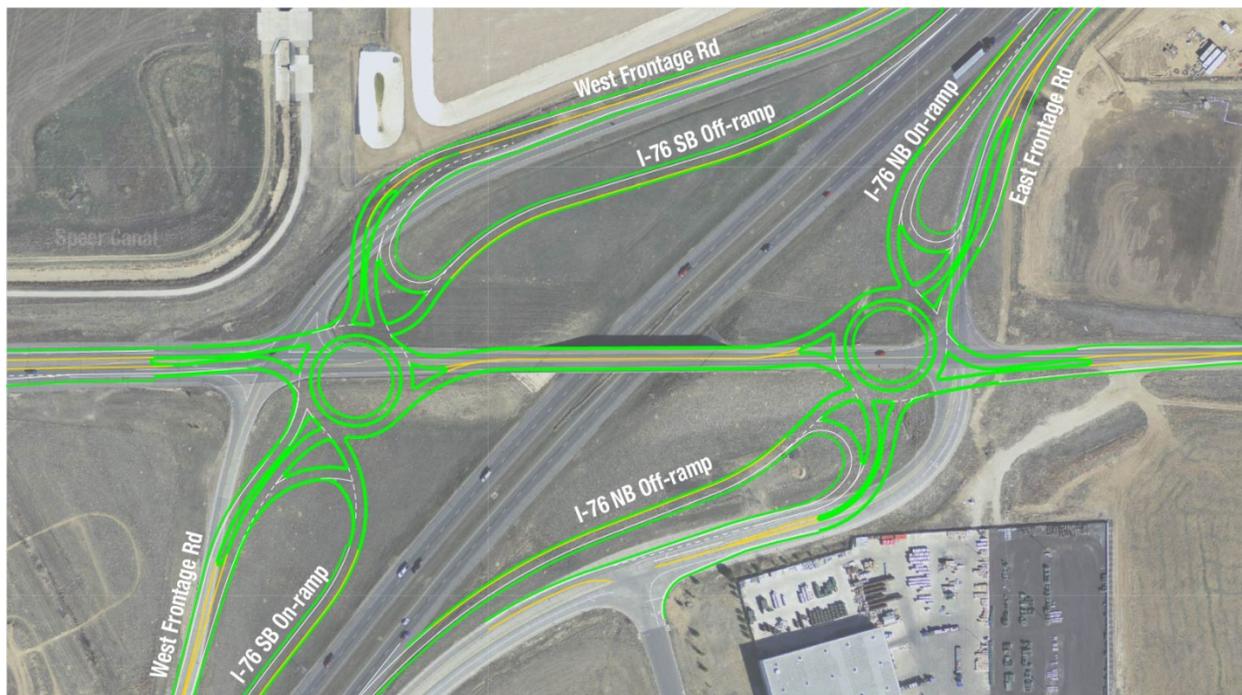
The No-Action Alternative serves as the baseline against which Action Alternatives were compared. For the purposes of this study, the No-Action Alternative is defined as the existing facilities within the project area. Under the No-Action Alternative, no further improvements, aside from ongoing operations and maintenance, would be made to the Bridge Street overpass at I-76.

1.3.2 Preferred Alternative: Two-Roundabout Interchange Design

The Preferred Alternative for the EA is the Two-Roundabout Interchange. This alternative combines the frontage roads and ramp terminals to make one six-legged roundabout on both the east side and west side of I-76 (see Exhibit 1-2). This alternative meets the project Purpose and Need. The Preferred Alternative would preserve the existing bridge, can be designed within the existing right of way (ROW), and avoids impacts to the Speer Canal to the northwest of the interchange. This alternative would be expected to operate at level of service (LOS) B in the year 2035.

Each roundabout would have an outside diameter of 200 feet, including a 12-foot truck apron for truck traffic. To develop approach angles as a traffic-calming technique and to lessen ROW impacts, both roundabouts would be placed off center of the existing Bridge Street center line. Splitter islands would be included to slow traffic coming into the roundabouts. The roundabouts would be designed with an 18-foot single lane for circulation and exclusive right turn bypasses for the ramp-to-frontage-road and frontage-road-to-ramp movements. This alternative would have the least amount of access points among the Action Alternatives.

Exhibit 1-2 Preferred Alternative: Two-Roundabout Interchange



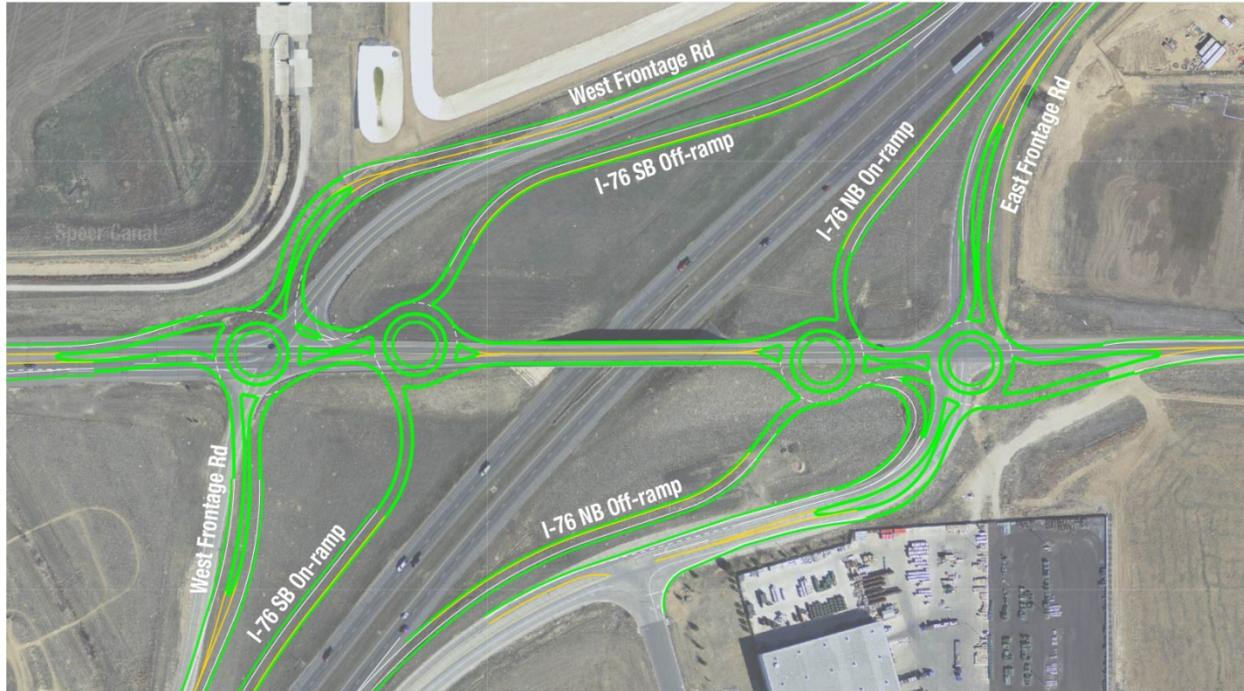
1.3.3 Alternative 2: Four-Roundabout Interchange Design

Alternative 2 for this EA is the Four-Roundabout Interchange. Exhibit 1-3 shows that this alternative would create two four-legged roundabouts on each side (east and west) of I-76. This alternative meets the project Purpose and Need. Alternative 2 preserves the existing bridge and has only minor ROW impacts. This alternative would be expected to operate at LOS B in the year 2035.

The two four-legged roundabouts on the east and west side of I-76 would allow truck traffic to be separated from residential traffic. Each roundabout would have an outside diameter of 110 feet, including a 12-foot

truck apron for truck traffic. With each pairing on the west and east sides, the roundabouts would be placed off center of the existing Bridge Street center line slightly to develop approach angles as a traffic-calming technique and to lessen ROW impacts. Splitter islands would be included to slow traffic coming into the roundabouts. The roundabouts would be designed with an 18-foot single lane for circulation and exclusive right turn bypasses for the ramp-to-frontage-road and frontage-road-to-ramp movements.

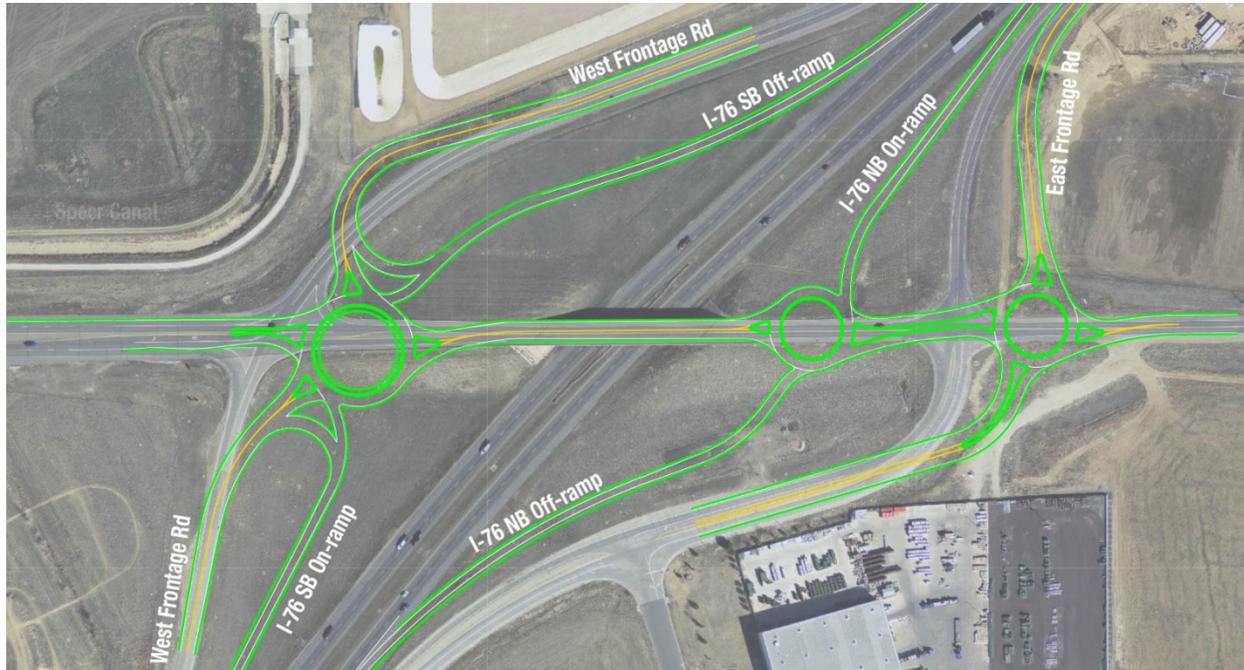
Exhibit 1-3 Alternative 2: Four-Roundabout Interchange



1.3.4 Alternative 3: Three-Roundabout Interchange Design

This alternative would consist of one large roundabout on the west side of I-76 and two smaller roundabouts on the east side of I-76 (see Exhibit 1-4). The West Frontage Road and I-76 westbound ramps would be combined into one six-legged roundabout with an outside diameter of 200 feet, including a 12-foot truck apron. The east side would combine the eastbound ramp terminal into one four-legged roundabout and the frontage roads into another four-legged roundabout. Each of the smaller roundabouts would have an outside diameter of 150 feet, including a 12-foot truck apron. This alternative would meet the project Purpose and Need. Alternative 3 would preserve the existing bridge and would have minor ROW impacts, primarily to the east. The two four-legged roundabouts on the east side of I-76 would allow truck traffic to be separated from residential traffic. This alternative would be expected to operate at LOS B in the year 2035.

For the pairing on the east side and the single roundabout on the west side, the roundabouts would be placed off center of the existing Bridge Street center line to develop approach angles as a traffic calming technique. Splitter islands would be included to slow traffic coming into the roundabouts. The roundabouts would be designed with an 18-foot single lane for circulation and exclusive right turn bypasses for the ramp-to-frontage-road and frontage-road-to-ramp movements.

Exhibit 1-4 Alternative 3: Three-Roundabout Interchange**1.4 Regulatory Environment**

This technical report has been prepared in accordance with the following federal and state regulations:

- **The United States Endangered Species Act (ESA)**—Protects federally listed plant and animal species with the goal of ensuring their long-term survival. The ESA is administered by the U.S. Fish and Wildlife Service (USFWS).
- **The Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act**—Vegetation clearing, earth-moving, bridge demolition, and other construction activities have the potential to disrupt nesting activity or destroy nests of bird species protected under the MBTA. The USFWS and Colorado Parks and Wildlife (CPW) administer these requirements.
- **The Colorado Nongame, Endangered, and Threatened Species Conservation Act**—Provides some protection within the state for listed species and establishes the state's intent to protect endangered, threatened, or rare species. The CPW is responsible for listing species.
- **Colorado Senate Bill 40 (SB 40)**—Colorado SB 40 (33-5-101-107, Colorado Revised Statutes [CRS] 1973, as amended) requires any agency of the state to obtain wildlife certification from the CPW when construction is planned in "... any stream or its bank or tributaries" Although SB 40 emphasizes the protection of fishing waters, it acknowledges the need to protect and preserve all fish and wildlife resources associated with streams in Colorado. CDOT and the CPW have a Memorandum of Agreement (MOA) with the Colorado Department of Natural Resources (CDOW and CDOT, 2013) to clarify when SB 40 certification is required and to describe the procedures to be followed by CDOT in securing this certification. Information regarding potential SB 40 resources located in the project area is presented in this report. Detailed information regarding methodology, results, impacts, and mitigation are presented under separate cover, if needed.
- **Prairie Dog Protection**—Is based on municipal and state agency policies; the most stringent policy for a given area must be followed. In CDOT ROW, the applicable policies are the CDOT Impacted Black-Tailed Prairie Dog Policy (CDOT, 2009) and the Black-Tailed Prairie Dog Relocation Guidelines (CDOT, 2002).
- **Noxious Weeds**—In addition to regulations primarily designed to protect fish and wildlife species, state and federal regulations are in place to protect habitat from plant species determined to be "noxious." The Colorado Department of Agriculture (CDOA) Noxious Weed Act of 2003 (CRS 35-5-101; CRS 35-5.5-101; Executive Order (EO) D-06-99) defines and prioritizes management objectives for state-designated noxious weeds.

2. Affected Environment

2.1 Data Collection Methodology

Project biologists visited the site on September 12, 2013, to assess the project area for biological resources. The weather during the site visit was overcast and raining, and the temperature was approximately 60° Fahrenheit. The following activities were completed during the site visit to assess general habitat and vegetation:

- Mr. DeMasters visually and physically surveyed the project area by walking accessible areas. During the site visit, a Trimble GeoXH6000 global positioning system (GPS) unit was utilized to record relevant information (see Exhibit 2-1).
- Noxious weeds were noted, dominant plant species were recorded, and representative photographs of the project area were taken. A photographic log is provided in Appendix A.
- The project area was evaluated for protected species and their habitat, including:
 - Federally listed threatened, endangered, candidate, and proposed species, as specified by the USFWS Information, Planning, and Conservation (IPaC) System (USFWS, 2014) (Appendix B);
 - State-listed endangered, threatened, and sensitive species, as specified by county on the CPW and Colorado Natural Heritage Program (CNHP) websites; and
 - Migratory bird habitat, specifically, areas within one-half mile of the project area were surveyed for existing raptor nests.

2.2 Current Environmental Conditions

2.2.1 Habitat and Vegetation

Historically a largely agricultural community, land in the immediate vicinity of the I-76 and Bridge Street intersection is primarily undeveloped (see Exhibit 2-1). West of I-76, there is residential development, and there is additional planned residential and commercial growth on both the east and west sides of the interstate. Future planned land uses include further industrial, employment, mixed-use, high-density residential, and agricultural development. A new high-density neighborhood is being developed on the northwest corner of Bridge Street and I-76.

Colorado's Eastern Plains, a portion of the Central Shortgrass Prairie (CSP) ecoregion, covers one-third of the state of Colorado, from approximately I-25 to the Kansas border (Bailey, 1995). The I-76 and Bridge Street project area is within this ecoregion. Climate has been the primary driver within the CSP; however, urban expansion and frequent disturbances now dictate the vegetation and landscape.

The proposed project would be generally located within existing roadway ROW. Given the presence of the roadway and bridge, it is likely that the natural vegetation, soils, and hydrology have been altered by filling, grading, and improvement activities in the past.

Habitat types within the project area included upland native or planted grasses intermixed with sporadic weedy roadside habitat, wetland habitat in two specific locations, and landscaped areas. Dominant species along much of the upland habitats included: smooth brome (*Bromus inermis*), crested wheatgrass (*Agropyron cristatum*), sand dropseed (*Sporobolus cryptandrus*), bulbous bluegrass (*Poa bulbosa*), witchgrass (*Panicum capillare*), sideoats grama (*Bouteloua curtipendula*), needle and thread grass (*Hesperostipa comata ssp. comata*), little bluestem (*Schizachyrium scoparium*), prairie sandreed (*Calamovilfa longifolia*) and sand bluestem (*Andropogon hallii*). Common herbaceous species were kochia (*Bassia scoparia*), curly dock (*Rumex crispus*), and alfalfa (*Medicago sativa*). Scattered shrubs and trees in these areas included rabbitbrush (*Chrysothamnus nauseous*), Siberian elms (*Ulmus pumila*), and plains cottonwoods (*Populus deltoides*).

Dominant species in the wetland areas included narrowleaf cattail (*Typha angustifolia*), marsh muhly (*Muhlenbergia racemosa*), curly dock, and giant ragweed (*Ambrosia trifida*).

Exhibit 2-1 Biological Resources Map



Noxious Weeds

There are weeds in the project area, but they are relatively few in number and not covering large areas. Weeds present within the project area are typical of Colorado Front Range. The State of Colorado places noxious weeds into one of three categories:

- **List A**—species are designated for eradication, and require prevention of seed production or development of reproductive propagules
- **List B**—species are managed and controlled by a noxious weed management plan, with the goal of stopping the continued spread of these species
- **List C**—species for which a project would develop management plans with the goal of supporting jurisdictions that choose to require management of those species (CDOA, 2013).

Four species of weeds on the CDOA Noxious Weed List were observed scattered throughout the project area (CDOA, 2013). See Exhibit 2-2, which presents the common name, scientific name, and state weed list status for these species.

Exhibit 2-2 Noxious Weeds Identified in the Project Area

Common Name	Scientific Name	State Weed List	U.S. Department of Agriculture Code (USDA, 2013)	Density in Project Area
Scotch thistle	<i>Onopordum acanthium</i>	B	ONAC	Low
Puncturevine	<i>Tribulus terrestris</i>	C	TRTE	Medium
Cheatgrass	<i>Bromus tectorum</i>	C	BRTE	Medium
Field bindweed	<i>Convolvulus arvensis</i>	C	COAR4	High

Source: Pinyon, 2013

Threatened, Endangered, and Sensitive Species

Federally Listed Species

Per the USFWS online IPaC System, there are nine federally listed species with the potential to occur in projects in Adams County (USFWS, 2014) (Appendix B) (see Exhibit 2-3).

Exhibit 2-3 Federally Listed Threatened and Endangered Species and Their Potential to Occur in the Project Area

Common Name	Species	Federal Status	Habitat	Potential for Occurrence in Project area
Birds				
Least Tern	<i>Sternula antillarum</i>	FE	Nests in summer along reservoirs, lakes and rivers with bare sandy shorelines or islands.	Low. See discussion below.
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	FT	Mature, old-growth forests that possess complex structural components; canyons, riparian, and conifer communities.	None. Potential habitat was not observed in the project area.

Common Name	Species	Federal Status	Habitat	Potential for Occurrence in Project area
Piping Plover	<i>Charadrius melodus</i>	FT	Wetlands, lakeshores, and marshes. Nesting habitat is along reservoirs, lakes, and rivers with bare sandy/pebbly areas with sparse vegetation.	Low. See discussion below.
Whooping Crane	<i>Grus americana</i>	FE	Utilizes wetlands, irrigated meadows, and reservoir edges as stopovers during migration.	Low. Could occur during migration, although unlikely. See discussion below.
Fish				
Pallid sturgeon	<i>Scaphirhynchus albus</i>	FE	Known population in Mississippi River from Missouri to the Gulf of Mexico.	Low. See discussion below.
Mammals				
Preble's meadow jumping mouse	<i>Zapus hudsonicus preblei</i>	FT	Occurs along Front Range of Colorado along permanent or intermittent streams in areas with herbaceous cover and adequate cover of shrubs and trees.	None. Suitable habitat does not occur in the project area.
Plants				
Colorado butterfly plant	<i>Gaura neomexicana</i> var. <i>coloradensis</i>	FT	Stream channel sites that are periodically disturbed, sub-irrigated alluvial soils along streams; open meadows on floodplains, including riparian areas.	None. Suitable habitat does not occur in the project area.
Ute ladies'-tresses orchid	<i>Spiranthes diluvialis</i>	FT	Sub-irrigated alluvial soils along streams; open meadows on floodplains, including riparian areas.	None. Suitable habitat does not occur in the project area.
Western prairie fringed orchid	<i>Platanthera praeclara</i>	FT	Mesic to wet unplowed tall-grass prairies and meadows.	Low. See discussion below.

Source: USFWS, 2014

Notes:

FT = federally listed as threatened

FE = federally listed as endangered

Five species are listed in Exhibit 2-3 because they occur downstream of the project area along the Platte River and could be impacted by projects that would result in water depletions to the South Platte River, a tributary of the Platte River. These include the interior Least Tern, pallid sturgeon, Piping Plover, Whooping Crane, and Western prairie fringed orchid. This project has elements, such as bridge demolition and reconstruction, which could cause a depletion to the South Platte River basin. To address the effects this depletion will have on federally listed species downstream that depend on the river for their survival, CDOT, as a state agency, is participating in the South Platte Water Related Activities Program (SPWRAP). CDOT is cooperating with FHWA, which provides a federal nexus for the project. In response to the need for formal consultation for the water used from the South Platte River basin, FHWA has prepared a Programmatic Biological Assessment (PBA) that will estimate total water usage from 2012 until 2019. The PBA addresses the five species noted above. The water used for this project will be reported to the USFWS at the year's end after the completion of the project in compliance with the aforementioned consultation. Effects to species not addressed in the PBA or affected by causes other than water depletions to the South Platte are analyzed separately in this Biological Resources Report (BRR).

State-Listed Species

The CPW lists 74 species of amphibians, birds, fish, mammals, reptiles, and mollusks as endangered, threatened, or of special concern within the state of Colorado (CPW, 2013). The majority of these species are not expected to occur in the project area because the project area is outside of their range and/or appropriate habitat is not present. According to the CNHP Tracking List and habitat requirements, eight state-listed sensitive species were identified with the potential to occur within the project area (CNHP, 2012) (Exhibit 8).

Exhibit 2-4 State-Listed Threatened and Endangered Species and Their Potential to Occur in the Project Area

Common Name	Species	State Status	Habitat	Potential for Occurrence in Project area
Amphibians				
Northern leopard frog	<i>Lithobates pipiens</i>	SC	Typical habitats include wet meadows and the banks and shallows of marshes, ponds, glacial kettle ponds, beaver ponds, lakes, reservoirs, streams, and irrigation ditches.	Low. Suitable habitat exists along the Speer Canal and West Burlington Extension Ditch within the project area.
Birds				
Bald Eagle	<i>Haliaeetus leucocephalus</i>	ST	Habitat includes reservoirs and rivers. In winter, they may also occur locally in semi-deserts and grasslands, especially near prairie dog towns.	Low. Could occur during migration or winter roosting, although unlikely due to the lack of large trees in the project area.
Ferruginous Hawk	<i>Buteo regalis</i>	SC	Preferred habitat is arid and semiarid grassland, foothills or mid-elevation plateaus with few trees. Avoids cultivated fields and developed areas.	None. Suitable habitat does not occur in the project area.

Common Name	Species	State Status	Habitat	Potential for Occurrence in Project area
Mountain Plover	<i>Charadrius montanus</i>	SC	Habitat includes prairie grasslands, arid plains, and fields. Nesting occurs on grazed shortgrass prairies, overgrazed tallgrass prairies, and fallow fields.	None. Suitable habitat does not occur in the project area.
Mammals				
Black-footed ferret	<i>Mustela nigripes</i>	SE	Occurs in grasslands or shrublands in association with prairie dog colonies.	None. Population has been extirpated in Colorado, with the exception of managed experimental populations.
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	SC	Habitat consists of intermixed shrublands, sagebrush habitat, and/or shortgrass and mixed-grass prairies. Occurs in central and south-central Colorado.	None. None observed in the project area.
Preble's meadow jumping mouse ¹	<i>Zapus hudsonius preblei</i>	ST	Occurs along Front Range of Colorado along permanent or intermittent streams in areas with herbaceous cover and adequate cover of shrubs and trees.	None. Suitable habitat does not occur in the project area.
Reptiles				
Common garter snake	<i>Thamnophis sirtalis</i>	SC	Inhabits marshes, ponds, and the edges of streams and for the most part restricted to aquatic, wetland, and riparian habitats along the floodplains of streams.	Low. Very little habitat exists along the Speer Canal and West Burlington Extension Ditch within the project area.

Sources: CNHP, 2012; USFWS, 2014

Notes:

ST = state listed as threatened

SE = state listed as endangered

SC = state listed as a Species of Concern

Migratory Birds

In addition to the state-listed raptors discussed above, the project could impact other migratory bird species. There are few large trees within the project area suitable for nesting. However, grassy upland areas and small trees in the project area could be used as nest sites. Additionally, there are a few large trees to the west in the southern portion of the project area and to the east outside of the project area that could be used by nesting raptors. These habitats are within the nesting raptor buffer area for many species (CPW, 2008). Cliff Swallow (*Petrochelidon pyrrhonota*) nests were observed in the concrete box culvert of the West Burlington Extension Ditch that passes under I-76 during the site visit (see Exhibit 2-1).

Senate Bill 40

Streams that meet one or more of the following criteria fall under the jurisdiction of SB 40:

1. All perennial streams represented by solid blue lines on United States Geological Service (USGS) 7.5' Quadrangle maps or the National Hydrography Dataset;
2. Segments of ephemeral and intermittent streams providing live water beneficial to fish and wildlife;
3. Segments of streams at which 25 percent or more of the vegetation is comprised of riparian vegetation such as cottonwood, willow, alder, sedges, or other plants dependent on groundwater or overbank flooding. Such segments will be within 300 feet upstream or downstream of the project. The 300-foot distance will be measured along the length of the stream by valley length;
4. Segments of streams having wetlands present within 600 feet upstream and downstream of the project. The 600-foot distance will be measured by valley length; and
5. Drainage ditches do NOT fall under the jurisdiction of SB 40.

Although the West Burlington Extension Ditch passes through the project area and is represented as a solid blue line on the USGS 7.5' Quadrangle map, it has been altered by past construction activities and is not a perennial stream. Moreover, the West Burlington Extension Ditch is a ditch and does not qualify as stated in criterion 5 above. Therefore, there are no SB 40 resources within project area.

3. Impact Analysis

3.1 Impacts Assessment Methodology

Biological resources were overlaid onto alternative footprints to identify areas of potential direct and indirect impacts.

3.2 No-Action Alternative

3.2.1 Direct Impacts

There would be no direct impacts to biological resources as a result of the No-Action Alternative.

3.2.2 Indirect Impacts

There would be no indirect impacts to biological resources as a result of the No-Action Alternative.

3.3 Action Alternatives

There are three Action Alternatives (Preferred Alternative, Alternative 2, and Alternative 3), as described in the Project Alternatives section above. All Action Alternatives would have similar impacts to biological resources. Impacts for all Action Alternatives are discussed below. Where impacts may differ between alternatives, they are called out in the discussion.

3.3.1 Direct Impacts

Habitat and Vegetation

There would be minimal direct impacts to habitat and vegetation in the project area; the Preferred Alternative would impact 0.2 acres; Alternative 2 would impact 0.5 acres, and Alternative 3 would impact 0.1 acres of land. The majority of construction-related activities would occur within existing ROW and already or previously disturbed areas; therefore, impacts to natural vegetation and habitat would be minimal.

Noxious Weeds

There would be minimal direct impacts to noxious weeds from the implementation of the Action Alternatives; the Preferred Alternative would impact 0.2 acres; Alternative 2 would impact 0.5 acres, and Alternative 3 would impact 0.1 acres of land. There are weeds in the project area, but they are relatively few in number and not covering large areas. Project-related construction could introduce new noxious weeds into the project area or increase the abundance of existing noxious weeds. Construction activities include mobilization of construction vehicles, excavation and transport of borrow material and topsoil, land clearing,

and reclamation. Removal of existing vegetation and disturbance of soils could encourage germination and spread of weed seeds and roots. Airborne seeds from noxious weeds present in areas adjacent to the project could germinate in areas where vegetation has been removed.

Threatened, Endangered, and Sensitive Species

The project would likely have no effect on four of the nine federally listed threatened and endangered species: the Colorado butterfly plant, Ute ladies'-tresses orchid, Preble's meadow jumping mouse, and the Mexican Spotted Owl. The project is located in an area that lacks critical habitat for these species.

In addition, five species are listed because they could occur downstream of the project area along the Platte River and could be impacted by projects that would result in water depletions to tributaries of the Platte River, such as the South Platte River. These include the Least Tern, pallid sturgeon, Piping Plover, Whooping Crane, and Western prairie fringed orchid. Projects in the South Platte River watershed could cause water depletion in the Platte River, as water could be used for dust suppression and soil moisture treatments, and could therefore have an adverse effect on the five downstream species. As discussed above, CDOT and FHWA are participating in the SPWRAP and have submitted a PBA to the USFWS. A Biological Opinion (BO: ES/CO: ES/LK-6-CO-12-F-020) was issued and mitigation for potential impacts to downstream species are outlined in the PBA and BO. Therefore, any depletion and adverse effect to the five downstream species would be mitigated through CDOT's participation in the SPWRAP.

In addition to the federally listed species, the project would likely have no effect on state-listed threatened and endangered species as minimal habitat exists in the project area for the eight state-listed species.

Migratory Birds

There would be minimal impacts to vegetation habitat in the project area; the Preferred Alternative would impact 0.2 acres; Alternative 2 would impact 0.5 acres, and Alternative 3 would impact 0.1 acres of land. This, along with construction activities, could negatively affect migratory birds nesting activities.

No raptor nests were observed in or around the project area. However, suitable habitat does occur in the project area, primarily within large trees less than a half-mile southwest and east of the project area. There would be potential for raptors to nest in these areas prior to construction. Therefore, there would be low potential to impact raptors within the CPW buffers for nesting raptors.

Cliff Swallow nests were observed in the existing box culvert structure of the West Burlington Extension Ditch under I-76. Therefore, work around the culvert would have the potential to impact nesting swallows.

Senate Bill 40

There would be no direct impacts to SB 40 resources.

Indirect Impacts

Indirect impacts from construction of any of the Action Alternatives could include the spread of noxious weeds from within the project area to other areas not currently invaded.

4. Mitigation

The following table outlines the mitigation strategies that will be used to limit impacts to biological resources during construction.

CDOT and FHWA are participating in the SPWRAP and have submitted a PBA to the USFWS. A BO (ES/CO: ES/LK-6-CO-12-F-020) was issued. Mitigation measures for potential impacts to downstream species are outlined in the Programmatic Biological Assessment and Biological Opinion. Therefore, any depletion and associated adverse effect to the five downstream species would be mitigated through CDOT's participation in the SPWRAP.

The mitigation strategies that will be used to limit impacts to biological resources during construction are discussed in the sections below.

4.1 Noxious Weeds

There are weeds in the project area, but these are relatively few in number and not covering large areas. Therefore, a noxious weed management plan is not recommended. However, during construction, the project is required to minimize the spread of noxious weeds according to the revised Sections 207, 212, and 217 of the CDOT Standard Specifications, and for implementing the standard CDOT best management practices (BMPs) designed to prevent the spread of noxious weeds, which are:

- Minimize soil disturbance to the greatest extent possible
- Do not stage equipment in weed-infested areas
- Coordinate weed management efforts with local jurisdictional agencies and adjacent landowners to the greatest extent possible
- Use herbicide immediately adjacent to wetlands and/or water bodies only if the label indicates that the use is appropriate for such areas
- Reseed all disturbed soil with a certified weed-free seed mix within seven days of completion of work during the growing season
- Do not use as topsoil during re-vegetation "A" horizon soil material currently supporting noxious weed cover of more than 10 percent
- Do not import topsoil due to the potential for spread of noxious weed
- Monitor and re-treat all areas treated for noxious weeds during construction, if necessary, to prevent re-establishment of noxious weeds
- Any compost used will be Seal of Testing Assurance certified weed-free

4.2 Federally Listed Threatened and Endangered Species

Mitigation for five federally listed downstream species will follow the PBA/BO mitigation from the SPWRAP.

4.3 Migratory Birds

Impacts to birds protected under the MBTA will follow CDOT Specification 240: Protection of Migratory Birds. This generally includes the following mandates.

Tree and Shrub Removal or Trimming:

- Tree and shrub removal or trimming will occur before April 1 or after August 31 if possible. If tree and shrub removal or trimming will occur between April 1 and August 31, a survey for active nests will be conducted by a biologist within the seven days immediately prior to the beginning of work in each area or phase of tree and shrub removal or trimming. The Contractor will notify the Engineer at least ten working days in advance of the need for a biologist to perform the survey.
- If an active nest containing eggs or young birds is found, the tree or shrub containing the active nest will remain undisturbed and protected until the nest becomes inactive. The nest will be protected by placing fence (plastic) a minimum distance of 50 feet from each nest to be undisturbed. This buffer dimension may be changed if determined appropriate by a biologist and approved by the Engineer. Work will not proceed within the fenced buffer area until the young have fledged or the nests have become inactive.
- If the fence is knocked down or destroyed by the Contractor, the Engineer will suspend the work, wholly or in part, until the fence is satisfactorily repaired at the Contractor's expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges, but will be charged as contract time.

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Appendices

Appendix A: Photographic Log

Appendix B: USFWS IPaC List

Appendix C: CDOW Raptor Guidelines

Photo 1.
Representative
habitat. Standing
near Bridge
Street, west of
I-76. Facing
west.



Photo 2. Large
Russian olive
on the edge of
the ROW, in the
northeast
quadrant, off of
the eastbound
frontage road.



Photo 3.
Ant hill, which
look like prairie
dog burrows on
an aerial.



Photo 4.
Representative
habitat, standing
in southeast
quadrant, facing
north-northeast.



Photo 5.
Treated scotch
thistle.



Photo 6.
Newly emergent
scotch thistle.





U.S. Fish and Wildlife Service

Natural Resources of Concern

This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

Colorado Ecological Services Field Office
DENVER FEDERAL CENTER
P.O. BOX 25486
DENVER, CO 80225
(303) 236-4773
<http://www.fws.gov/coloradoES>
<http://www.fws.gov/platteriver>

Project Name:

I-76 and Bridge IPac Countywide

Project Counties:

Adams, CO

Project Type:

Transportation

Endangered Species Act Species List ([USFWS Endangered Species Program](#))

There are a total of 9 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Note that 5 of these species should be considered only under certain conditions. See the second table below for a list of these species and the conditions under which effects should be considered. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section below for critical habitat that lies within your project area. Please contact the designated FWS office if you have questions.

Species that should be considered in an effects analysis for your project:



Natural Resources of Concern

Birds	Status		Has Critical Habitat	Contact
Mexican Spotted owl (<i>Strix occidentalis lucida</i>) Population: Entire	Threatened	species info	Final designated critical habitat	Colorado Ecological Services Field Office
Flowering Plants				
Colorado Butterfly plant (<i>Gaura neomexicana</i> var. <i>coloradensis</i>)	Threatened	species info	Final designated critical habitat	Colorado Ecological Services Field Office
Ute ladies'-tresses (<i>Spiranthes diluvialis</i>)	Threatened	species info		Colorado Ecological Services Field Office
Mammals				
Preble's meadow jumping mouse (<i>Zapus hudsonius preblei</i>) Population: U.S.A. (CO, WY)	Threatened	species info	Final designated critical habitat	Colorado Ecological Services Field Office

Species that should be considered in an effects analysis for your project under specified conditions:

Birds				
Least tern (<i>Sterna antillarum</i>) Population: interior pop.	Endangered	species info	condition info	Colorado Ecological Services Field Office
Piping Plover (<i>Charadrius melodus</i>) Population: except Great Lakes watershed	Threatened	species info	condition info	Final designated critical habitat Final designated critical habitat Colorado Ecological Services Field Office



Natural Resources of Concern

Whooping crane (<i>Grus americana</i>) Population: except where EXPN	Endangered	species info	condition info	Final designated critical habitat	Colorado Ecological Services Field Office
Fishes					
Pallid sturgeon (<i>Scaphirhynchus albus</i>) Population: Entire	Endangered	species info	condition info		Colorado Ecological Services Field Office
Flowering Plants					
Western Prairie Fringed Orchid (<i>Platanthera praeclara</i>)	Threatened	species info	condition info		Colorado Ecological Services Field Office

Critical habitats within your project area:

There are no critical habitats within your project area.

FWS National Wildlife Refuges ([USFWS National Wildlife Refuges Program](#)).

There are 1 refuges in your refuge list

Rocky Mountain Arsenal National Wildlife Refuge (303) 289-0232 6550 GATEWAY ROAD, BUILDING 121 COMMERCE CITY, CO80022	refuge profile
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FWS Migratory Birds ([USFWS Migratory Bird Program](#)).

Most species of birds, including eagles and other raptors, are protected under the Migratory Bird Treaty Act (16 U.S.C. 703). Bald eagles and golden eagles receive additional protection under the



U.S. Fish and Wildlife Service

Natural Resources of Concern

[Bald and Golden Eagle Protection Act](#) (16 U.S.C. 668). The Service's [Birds of Conservation Concern \(2008\)](#) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

Migratory bird information is not available for your project location.

NWI Wetlands ([USFWS National Wetlands Inventory](#)).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate [U.S. Army Corps of Engineers District](#).

IPaC is unable to display wetland information at this time.



RECOMMENDED BUFFER ZONES AND SEASONAL RESTRICTIONS FOR COLORADO RAPTORS

Tolerance limits to disturbance vary among as well as within raptor species. As a general rule, Ferruginous Hawks and Golden Eagles respond to human activities at greater distances than do Ospreys and America Kestrels. Some individuals within a species also habituate and tolerate human activity at a proximity that would cause the majority of the group to abandon their nests. Other individuals become sensitized to repeated encroachment and react at greater distances. The tolerance of a particular pair may change when a mate is replaced with a less tolerant individual and this may cause the pair to react to activities that were previously ignored. Responses will also vary depending upon the reproductive stage. Although the level of stress is the same, the pair may be more secretive during egg laying and incubation and more demonstrative when the chicks hatch.

The term "disturbance" is ambiguous and experts disagree on what actually constitutes a disturbance. Reactions may be as subtle as elevated pulse rate or as obvious as vigorous defense or abandonment. Impacts of disturbance may not be immediately evident. A pair of raptors may respond to human intrusion by defending the nest, but well after the disturbance has passed, the male may remain in the vicinity for protection rather than forage to feed the nestlings. Golden eagles rarely defend their nests, but merely fly a half mile or more away and perch and watch. Chilling and over heating of eggs or chicks and starvation of nestlings can result from human activities that appeared not to have caused an immediate response.

A 'holistic' approach is recommended when protecting raptor habitats. While it is important for land managers to focus on protecting nest sites, equal attention should focus on defining important foraging areas that support the pair's nesting effort. Hunting habitats of many raptor species are extensive and may necessitate interagency cooperation to assure the continued nest occupancy. Unfortunately, basic knowledge of habitat use is lacking and may require documentation through telemetry investigations or intensive observation. Telemetry is expensive and may be disruptive so a more practical approach is to assume that current open space is important and should be protected.

Although there are exceptions, the buffer areas and seasonal restrictions suggested here reflect an informed opinion that if implemented, should assure that the majority of individuals within a species will continue to occupy the area. Additional factors, such as intervening terrain, vegetation screens, and the cumulative impacts of activities should be considered.

These guidelines were originally developed by CDOW raptor biologist Gerald R. Craig (retired) in December 2002. To provide additional clarity in guidance, incorporate new information, and update the conservation status of some species, the guidelines were revised in January 2008. Further revisions of this document may become necessary as additional information becomes available.

RECOMMENDED BUFFER ZONES AND SEASONAL RESTRICTIONS

BALD EAGLE

Nest Site:

No surface occupancy (beyond that which historically occurred in the area; see 'Definitions' below) within ¼ mile radius of active nests (see 'Definitions' below). Seasonal restriction to human encroachment (see 'Definitions' below) within ½ mile radius of active nests from October 15 through July 31. This closure is more extensive than the National Bald Eagle Management Guidelines (USFWS 2007) due to the generally open habitat used by Colorado's nesting bald eagles.

Winter Night Roost:

No human encroachment from November 15 through March 15 within ¼ mile radius of an active winter night roost (see 'Definitions' below) if there is no direct line of sight between the roost and the encroachment activities. No human encroachment from November 15 through March 15 within ½ mile radius of an active winter night roost if there is a direct line of sight between the roost and the encroachment activities. If periodic visits (such as oil well maintenance work) are required within the buffer zone after development, activity should be restricted to the period between 1000 and 1400 hours from November 15 to March 15.

Hunting Perch:

Diurnal hunting perches (see 'Definitions' below) associated with important foraging areas should also be protected from human encroachment. Preferred perches may be at varying distances from human encroachment and buffer areas will vary. Consult the Colorado Division of Wildlife for recommendations for specific hunting perches.

GOLDEN EAGLE

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within ¼ mile radius of active nests. Seasonal restriction to human encroachment within ½ mile radius of active nests from December 15 through July 15.

OSPREY

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within ¼ mile radius of active nests. Seasonal restriction to human encroachment within ¼ mile radius of active nests from April 1 through August 31. Some osprey populations have habituated and are tolerant to human activity in the immediate vicinity of their nests.

FERRUGINOUS HAWK

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within ½ mile radius of active nests. Seasonal restriction to human encroachment within ½ mile radius of active nests from February 1 through July 15. This species is especially prone to nest abandonment during incubation if disturbed.

RED-TAILED HAWK

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within 1/3 mile radius of active nests. Seasonal restriction to human encroachment within 1/3 mile radius of active nests from February 15 through July 15. Some members of this species have adapted to urbanization and may

tolerate human habitation to within 200 yards of their nest. Development that encroaches on rural sites is likely to cause abandonment.

SWAINSON'S HAWK

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within ¼ mile radius of active nests. Seasonal restriction to human encroachment within ¼ mile radius of active nests from April 1 through July 15. Some members of this species have adapted to urbanization and may tolerate human habitation to within 100 yards of their nest.

PEREGRINE FALCON

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within ½ mile radius of active nests. Seasonal restriction to human encroachment within ½ mile of the nest cliff(s) from March 15 to July 31. Due to propensity to relocate nest sites, sometimes up to ½ mile along cliff faces, it is more appropriate to designate 'Nesting Areas' that encompass the cliff system and a ½ mile buffer around the cliff complex.

PRAIRIE FALCON

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within ½ mile radius of active nests. Seasonal restriction to human encroachment within ½ mile radius of active nests from March 15 through July 15.

NORTHERN GOSHAWK

No surface occupancy (beyond that which historically occurred in the area) within ½ mile radius of active nests. Seasonal restriction to human encroachment within ½ mile radius of active nests from March 1 through September 15.

BURROWING OWL

Nest Site:

No human encroachment within 150 feet of the nest site from March 15 through October 31. Although Burrowing Owls may not be actively nesting during this entire period, they may be present at burrows up to a month before egg laying and several months after young have fledged. Therefore it is recommended that efforts to eradicate prairie dogs or destroy abandoned towns not occur between March 15 and October 31 when owls may be present. Because nesting Burrowing Owls may not be easily visible, it is recommended that targeted surveys be implemented to determine if burrows are occupied. More detailed recommendations are available in a document entitled "Recommended Survey Protocol and Actions to Protect Nesting Burrowing Owls" which is available from the Colorado Division of Wildlife

Recommended Buffer Zones and Seasonal Restrictions Around Raptor Use Sites

Species and Use	Buffer	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Bald Eagle													
ACTIVE NEST - No Surface Occupancy	1/4 Mile												
ACTIVE NEST - No Human Encroachment	1/2 Mile												
ACTIVE WINTER NIGHT ROOST without a direct line of sight- No Human Encroachment	1/4 Mile												
ACTIVE WINTER NIGHT ROOST with a direct line of sight - No Human Encroachment	1/2 Mile												
HUNTING PERCH - No Human Encroachment	Contact CDOW												
Golden Eagle													
ACTIVE NEST - No Surface Occupancy	1/4 Mile												
ACTIVE NEST - No Human Encroachment	1/2 Mile												
Osprey													
ACTIVE NEST - No Surface Occupancy	1/4 Mile												
ACTIVE NEST - No Human Encroachment	1/4 Mile												
Ferruginous Hawk													
ACTIVE NEST - No Surface Occupancy	1/2 Mile												
ACTIVE NEST - No Human Encroachment	1/2 Mile												
Red-tailed Hawk													
ACTIVE NEST - No Surface Occupancy	1/3 Mile												
ACTIVE NEST - No Human Encroachment	1/3 Mile												
Swainson's Hawk													
ACTIVE NEST - No Surface Occupancy	1/4 Mile												
ACTIVE NEST - No Human Encroachment	1/4 Mile												
Peregrine Falcon													
ACTIVE NEST - No Surface Occupancy	1/2 Mile												
ACTIVE NEST - No Human Encroachment	1/2 Mile												
Prairie Falcon													
ACTIVE NEST - No Surface Occupancy	1/2 Mile												
ACTIVE NEST - No Human Encroachment	1/2 Mile												
Northern Goshawk													
ACTIVE NEST - No Surface Occupancy	1/2 Mile												
ACTIVE NEST - No Human Encroachment	1/2 Mile												
Burrowing Owl													
ACTIVE NEST - No Human Encroachment	150 feet												

= time period for which seasonal restrictions are in place.

DEFINITIONS

Active nest – Any nest that is frequented or occupied by a raptor during the breeding season, or which has been active in any of the five previous breeding seasons. Many raptors use alternate nests in various years. Thus, a nest may be active even if it is not occupied in a given year.

Active winter night roost – Areas where Bald Eagles gather and perch overnight, and sometimes during the day in the event of inclement weather. Communal roost sites are usually in large trees (live or dead) that are relatively sheltered from wind and are generally in close proximity to foraging areas. These roosts may also serve a social purpose for pair bond formation and communication among eagles. Many roost sites are used year after year.

Human encroachment – Any activity that brings humans in the area. Examples include driving, facilities maintenance, boating, trail access (e.g., hiking, biking), etc.

Hunting perch – Any structure on which a raptor perches for the purpose of hunting for prey. Hunting perches provide a view of suitable foraging habitat. Trees are often used as hunting perches, but other structures may also be used (utility poles, buildings, etc.).

Surface occupancy – Any physical object that is intended to remain on the landscape permanently or for a significant amount of time. Examples include houses, oil and gas wells, tanks, wind turbines, roads, tracks, etc.

CONTACT

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Revised 02/2008

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every receipt, invoice, and bill should be properly filed and indexed for easy retrieval. This not only helps in tracking expenses but also ensures compliance with tax regulations. The text further explains how digital record-keeping can significantly reduce the risk of errors and fraud compared to traditional paper-based systems.

In the second section, the author delves into the various methods used for data collection and analysis. It covers both primary and secondary data sources, highlighting the strengths and limitations of each. The discussion includes statistical techniques for analyzing large datasets, such as regression analysis and hypothesis testing. The author also touches upon the ethical considerations surrounding data collection, particularly regarding privacy and informed consent.

The third part of the document focuses on the application of these concepts in a real-world scenario. It provides a detailed case study of a company that implemented a new data management system. The case study illustrates how the company was able to identify inefficiencies, optimize its operations, and ultimately increase its profitability. The author concludes by offering practical advice for businesses looking to improve their data management practices.