

# **APPENDIX A12**

---

## **COLORADO SPECIAL STATUS SPECIES TECHNICAL MEMORANDUM**

**FOR THE**

### **State Highway 9 Iron Springs Alignment Environmental Assessment**

**Prepared for**

**COLORADO DEPARTMENT OF TRANSPORTATION**

**FEDERAL HIGHWAY ADMINISTRATION**

**Prepared by**

**JEFF PETERSON**

**COLORADO DEPARTMENT OF TRANSPORTATION**

**ENVIRONMENTAL PROGRAMS BRANCH**

**April 2014**

## CONTENTS

<b>Introduction.....</b>	<b>1</b>
<b>Proposed Action .....</b>	<b>1</b>
<b>No Action Alternative .....</b>	<b>3</b>
<b>Applicable Statutes and Regulations.....</b>	<b>3</b>
State – Colorado State Statute Title 33, articles 2 and 8.....	3
<b>Issues: Possibility of impacting the Colorado State Special Status Species .....</b>	<b>5</b>
Method of Evaluation .....	5
Historical Precedent from Other Activities Proposed for this Area .....	5
Other Uses: Recreation.....	7
Habitat within the Study Area .....	7
Lodgepole Pine Forest Community.....	9
Aspen Mixed Conifer Community.....	9
Grass/Forb and Shrub Community .....	9
Wetlands.....	9
<b>State Listed Threatened and Endangered Species .....</b>	<b>10</b>
Bald Eagle.....	12
Boreal Toad.....	12
Northern Leopard Frog.....	14
Northern Pocket Gopher .....	15
<b>Project Impacts.....</b>	<b>16</b>
No Action Alternative .....	16
Proposed Action.....	17
<b>Impacts to Target Species .....</b>	<b>18</b>
<b>Conclusion .....</b>	<b>19</b>
Agencies Contacted .....	19
Date of Data Used.....	19
Context Summary .....	19
Impact Summary.....	19
Result of Evaluation .....	19
Impact Significant Determination.....	19
Required Project Modifications to Avoid Impacts.....	20
Permits.....	20
Mitigation Description .....	20
<b>References.....</b>	<b>21</b>

## **TABLES**

Table 1	Vegetation Cover Types within the Iron Springs Study Area .....	7
Table 2	Common Vegetation within the Iron Springs Study Area .....	7
Table 3	Roadway Vegetation Impacts—No Action Alternative.....	16
Table 4	Bikeway Alignment Vegetation Impacts—No Action Alternative .....	16
Table 5	New Roadway Alignment and Dickey Day Trail Connection Improvements, Vegetation Impacts—Proposed Action.....	17

## **Figures**

Figure 1	Proposed Action.....	2
Figure 2	No Action Alternative (Previously Approved).....	4
Figure 3	Vegetation Type in the Ophir Mountain Project Area.....	6
Figure 4	Natural Vegetation Communities .....	8

## **ACRONYMS**

CDOT	Colorado Department of Transportation
CPW	Colorado Parks and Wildlife
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FHWA	Federal Highway Administration
mm	Millimeter (1 mm= 0.04 inches)
MPB	Mountain Pine Beetle
ROD	Record of Decision
SH 9	State Highway 9
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

2 This technical memorandum has been prepared in support of the State Highway (SH) 9 Iron  
3 Springs Alignment Environmental Assessment (EA). This memorandum evaluates the effects of  
4 the Iron Springs Alignment (Proposed Action) and the No Action Alternative (widening on the  
5 existing alignment) with respect to the Colorado Special Status Species, species considered by  
6 the Colorado Parks and Wildlife (CPW) as threatened, endangered or of special concern. Species  
7 that are listed by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act  
8 (ESA) are addressed in separate documents including a Technical Report and an Environmental  
9 Assessment, submitted to the USFWS, and are not further addressed here.

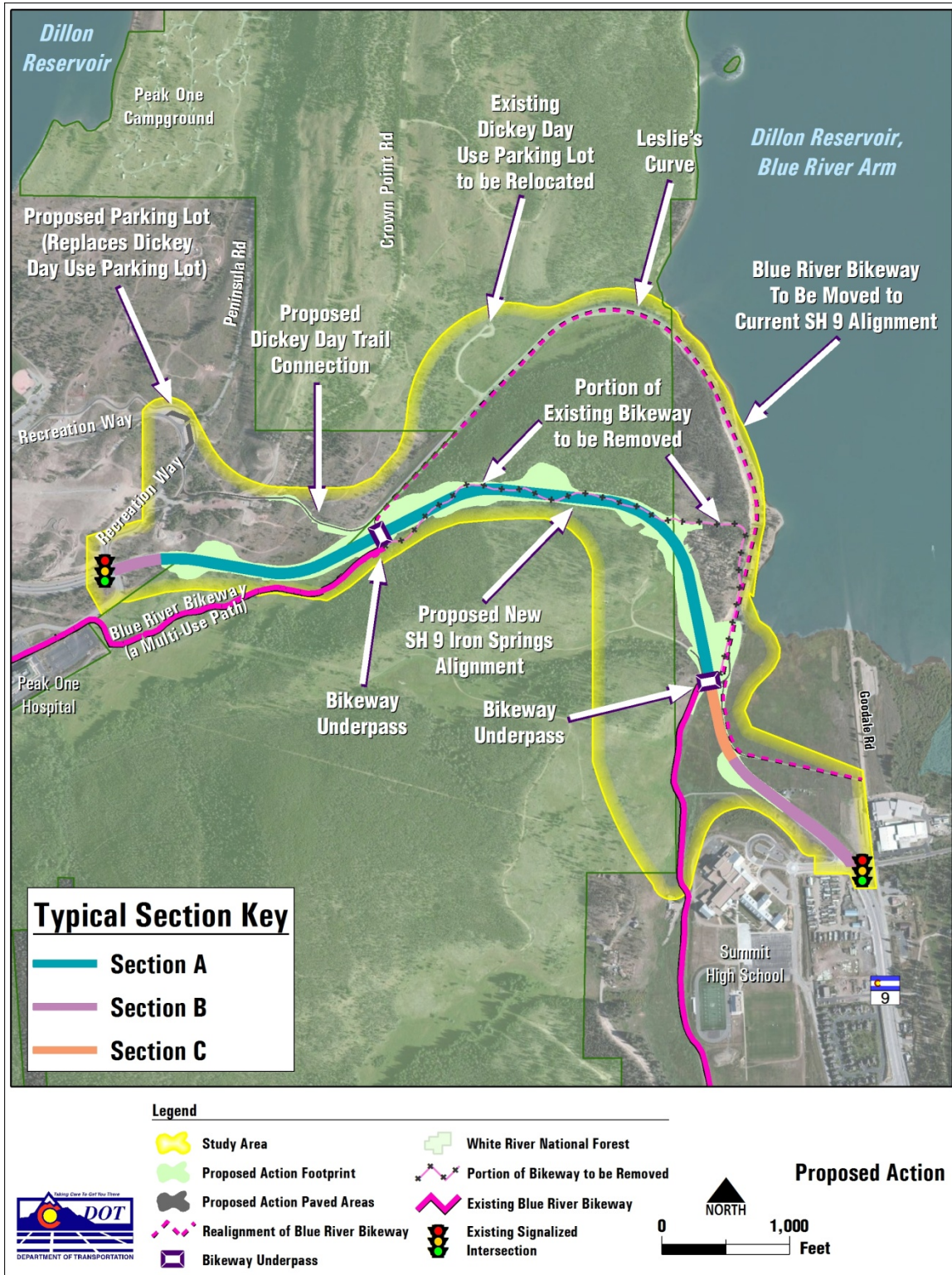
10 PROPOSED ACTION

11 As part of implementation of the SH 9 improvements between Frisco and Breckenridge, the  
12 Colorado Department of Transportation (CDOT) and Federal Highway Administration (FHWA)  
13 are proposing to realign approximately 1.3 miles of existing SH 9 just south of the Town of  
14 Frisco, Colorado (see **Figure 1**). This stretch of SH 9, which falls between mileposts 93 and 95,  
15 would be realigned to provide a four-lane reduced section roadway away from Dillon Reservoir.  
16 This Proposed Action, also referred to as the Iron Springs Alignment, would shorten SH 9 by  
17 approximately 0.4 mile. The Proposed Action would provide roadway safety benefits, as well as  
18 water quality and drinking water protection benefits, as a result of straightening the highway to  
19 remove a tight, compound curve (known as Leslie’s Curve), which is in close proximity to Dillon  
20 Reservoir. The existing condition on Leslie’s Curve is considered substandard and contributes to  
21 accidents in the area.

22 The Proposed Action would include realignment of a portion of the existing Frisco-Farmer’s  
23 Korner-Blue River Bikeway (also referred to herein for brevity as the Blue River Bikeway or  
24 bikeway). This portion of the bikeway would be moved to the alignment currently occupied by  
25 SH 9, would be approximately 0.4 mile longer than the existing bikeway, and would be at a  
26 gentler grade than the current alignment. In addition, the Dickey Day Use Parking Lot would be  
27 moved west to a new parking lot to be constructed as part of the project, with access provided  
28 via Recreation Way using the existing signalized intersection at SH 9 and Recreation Way. A new  
29 trail connection would be provided to link the proposed parking lot with the realigned bikeway  
30 and existing trail, which currently begins at the old Dickey Day Use Parking Lot.

31 Additional detail regarding the Proposed Action, including typical sections, is provided in the EA  
32 main text and the project drawings provided in Appendix A1 of the EA.

1 **Figure 1 Proposed Action**



2

3

1 **NO ACTION ALTERNATIVE**

2 If the Proposed Action is not selected for implementation, SH 9 would be widened to provide a  
3 four-lane reduced section roadway along the existing alignment as previously approved in the  
4 SH 9 Frisco to Breckenridge Environmental Impact Statement (EIS) and Record of Decision (ROD)  
5 (CDOT and FHWA, 2004a; 2004b) (**Figure 2**). The 2004 Preferred Alternative is considered the  
6 “No Action Alternative” for this EA and is used as a baseline for comparison with the Proposed  
7 Action. These improvements would be implemented if the Proposed Action is not selected.

8 Widening along the existing alignment would require large rock cuts and retaining walls  
9 (problematic to design and construct), and the highway would remain in close proximity to  
10 Dillon Reservoir. The length of SH 9 would remain the same as that of the existing highway. The  
11 tight Leslie’s Curve would not be eliminated; however, safety features such as a barrier between  
12 opposing lanes would be installed to improve safety.

13 With this alternative, approximately 0.8 mile of the existing Blue River Bikeway would be  
14 realigned to allow space for the highway widening. The length of bikeway would not change  
15 appreciably and the current relatively steep grades on the path would remain.

16 Additional detail regarding the No Action Alternative, including typical sections, is provided in  
17 the EA main text and the project drawings provided in Appendix A1 of the EA.

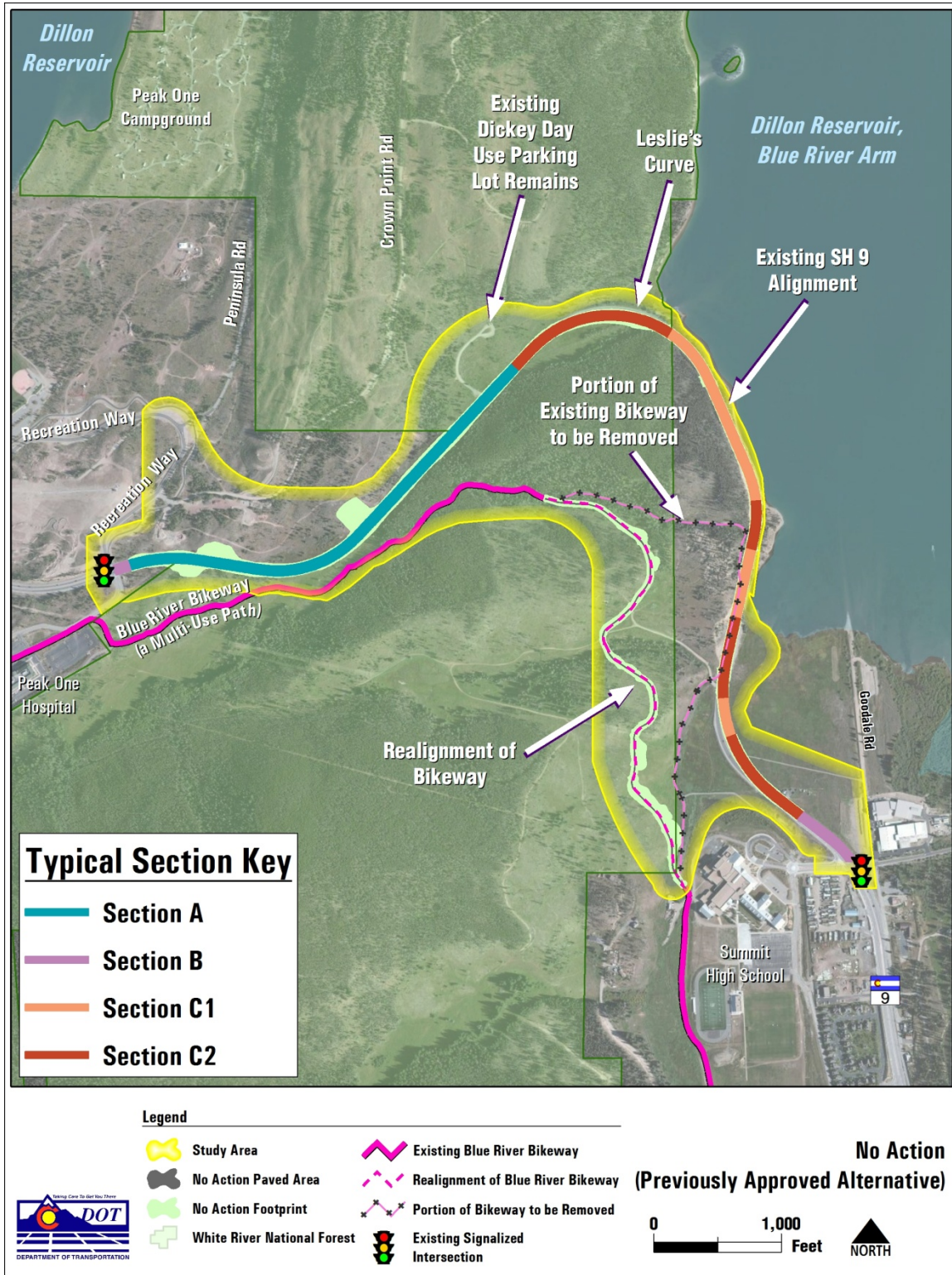
18 **APPLICABLE STATUTES AND REGULATIONS**

19 *State – Colorado State Statute Title 33, articles 2 and 8*

20 In 1985, the Colorado General Assembly declared that it is the policy of the state to manage all  
21 nongame wildlife for human enjoyment and welfare, for scientific purposes, and to ensure their  
22 perpetuation as members of ecosystems. As part of that declaration, the state found that some  
23 species or subspecies of wildlife native to the state may be found to be endangered or  
24 threatened within the state and should be afforded protection to maintain and enhance their  
25 numbers to the extent possible. These actions are carried out through various laws and  
26 regulations which make it illegal for any person to “take, possess, transport, export, process, sell  
27 or offer for sale, or ship, knowingly transport or receive for shipment any species or subspecies  
28 of wildlife appearing on the list of wildlife indigenous to this state determined to be threatened  
29 or endangered within the state.”



1 **Figure 2 No Action Alternative (Previously Approved)**



2

3

1 ISSUES: POSSIBILITY OF IMPACTING THE COLORADO STATE  
2 SPECIAL STATUS SPECIES

3 *Method of Evaluation*

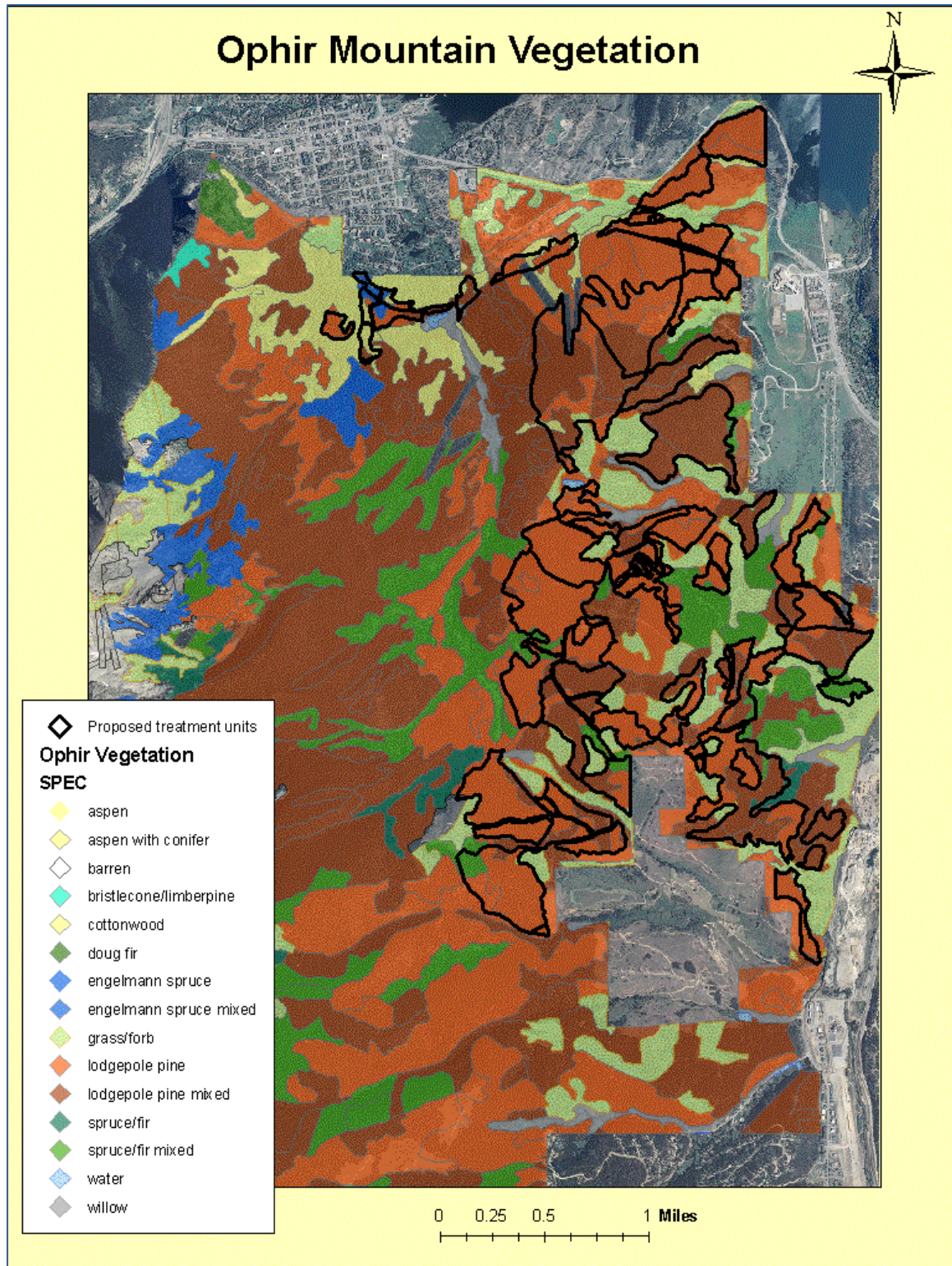
4 As noted, state listed threatened and endangered species are protected under the Colorado  
5 State Statute Title 33, articles 2 and 8. Potential effects on species state listed as threatened or  
6 endangered could be considered illegal under the statute. No regulations require a consultation  
7 with CPW for effects to threatened, endangered, or species of concern, but in an effort to avoid  
8 violating the statute, coordination with the CPW concerning the effects and avoidance and  
9 minimization measures was initiated prior to the preparation of this document. Potential habitat  
10 for special status species was assessed by reviewing existing data from readily available sources  
11 as well as site reconnaissance.

12 *Historical Precedent from Other Activities Proposed for this Area*

13 A separate action, proposed by the U.S. Forest Service (USFS), is the Ophir Mountain Forest  
14 Health and Fuels Project, which proposes to treat several areas of timber by implementing a  
15 “clear cut with leave trees” prescription, which would allow for the removal of dead trees, trees  
16 currently infested with mountain pine beetle (MPB), trees susceptible to being infested with  
17 MPB, or windthrow-prone trees while retaining the healthy living trees within a given stand. In  
18 general, all stands proposed for treatment are composed solely of or dominated by lodgepole  
19 pine trees; however, some aspen, spruce, and fir exist as well. These species would be excluded  
20 from cutting as much as practical. Due to the retention of live or non-infested trees, many areas  
21 proposed for treatment would not be clearcut entirely. Instead, clearcuts would at times be  
22 smaller than the unit boundaries shown in **Figure 3** and would retain patches and individual  
23 trees of various species within their boundaries. The project proposal is to treat approximately  
24 1,497 acres of lodgepole pine (USDA, 2011a). To accomplish the proposed treatments,  
25 approximately 9.3 miles of haul roads, 1.9 miles of access roads, and 8.6 miles of temporary  
26 roads would be used (USDA, 2011a).



1 Figure 3 Vegetation Type in the Ophir Mountain Project Area



2

1 *Other Uses: Recreation*

2 A large portion of habitat within the study area has been disturbed to some extent by human  
 3 activity. In general, the northern portion of the study area (north of the current SH 9 alignment)  
 4 contains a portion of the Frisco Peninsula, which is extensively used for recreation activities. The  
 5 Frisco Peninsula is subject to year-round recreation activities and contains the Frisco Nordic  
 6 center, a large tubing hill, campgrounds, picnic facilities, parking areas, and an extensive trails  
 7 system.

8 *Habitat within the Study Area*

9 Vegetation resource data for the study area were collected from existing sources such as maps,  
 10 databases, publications, and agency information. This information was used to provide context  
 11 of the resource in the area and to assist in assessing direct, indirect, and cumulative effects to  
 12 special status species in the study area. Field studies were conducted in the study area during  
 13 the fall of 2012 and provided the basis for assessing common plant species present and the  
 14 current extent of vegetation communities. Another survey was conducted during the summer of  
 15 2013 to collect additional information on vegetation within the study area. The extent of the  
 16 natural vegetation communities was drawn on aerials showing the study area and then digitized  
 17 using geographic information system overlays. **Figure 4** shows the extent of natural vegetation  
 18 communities in the study area. Acreages are provided in **Table 1**. **Table 2** lists the common  
 19 vegetation observed in the study area. Vegetation cover types, including lodgepole pine forest,  
 20 aspen/mixed conifer, grass/forb and shrub, and wetlands, are described in the next section.

21 **Table 1 Vegetation Cover Types within the Iron Springs Study Area**

Vegetation Cover Type	Acres in Study Area	Percent
Lodgepole Pine Forest	73.4	43.8
Grass/Forb with Shrub	58.7	35.0
Aspen/Mixed Conifer	11.8	7.0
Open Canopy Lodgepole Pine with Grass/Forb	7.8	4.6
Wetlands	7.2	4.3
Grass Forb and Aspen/Mixed Conifer	4.7	2.8
Sagebrush with Grass/Forb	3.9	2.3
<b>TOTAL</b>	167.5	99.8

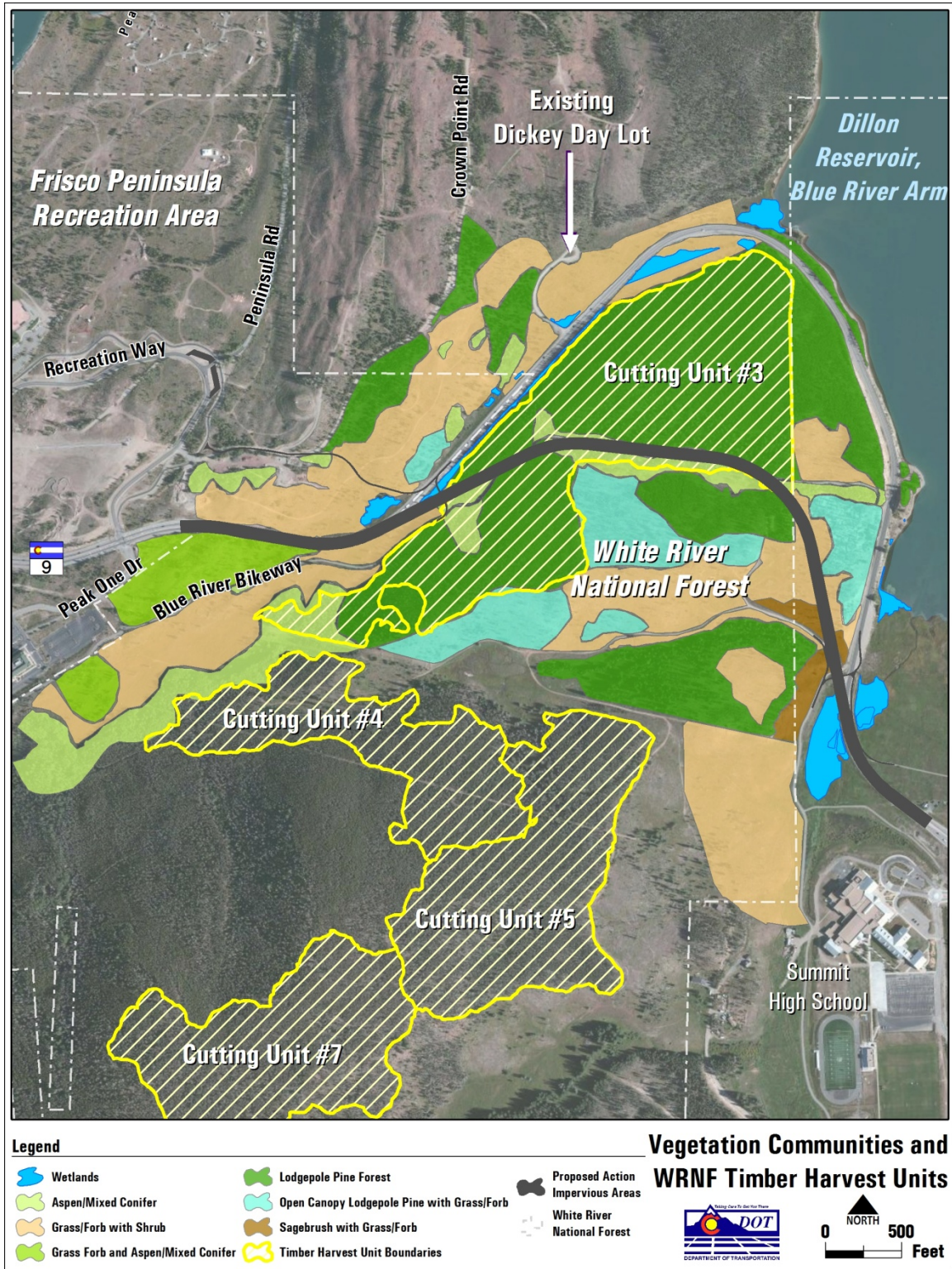
22 **Table 2 Common Vegetation within the Iron Springs Study Area**

Common Name	Scientific Name*
Lodgepole Pine	<i>Pinus contorta</i>
Quaking Aspen	<i>Populus tremuloides</i>
Mountain Sagebrush	<i>Artemisia tridentate ssp. vaseyana</i>
Creeping Holly Grape	<i>Mahonia repens</i>
Common Juniper	<i>Juniperus communis</i>
Junegrass	<i>Koeleria macrantha</i>
Western Wheatgrass	<i>Pascopyrum smithii</i>
Ricegrass	<i>Achnatherum hymenoides</i>
Bluebunch Wheatgrass	<i>Pseudoroegneria spicata</i>

\* Plant nomenclature derived from the USDA Plants database (<http://plants.usda.gov/index.html>), accessed January 14, 2013.



1 Figure 4 Natural Vegetation Communities



2  
3

1 **Lodgepole Pine Forest Community**

2 The lodgepole pine forest community is typically found below 10,500 feet in elevation and is  
3 characterized by even-aged stands of lodgepole pine (*Pinus contorta*) with a low diversity of  
4 associated understory species. Common shade tolerant understory associates observed in the  
5 study area include creeping holly grape (*Mahonia repens*) and common juniper (*Juniperus*  
6 *communis*). The USFS has classified the majority of lodgepole pine forest in the southern portion  
7 of the study area as “even-aged with no regeneration observed” (USDA, 2011a). Lodgepole pine  
8 stands tend to be even-aged because seedlings are shade and competition intolerant and  
9 successful regeneration and establishment is linked to stand-replacing disturbances, such as fire  
10 or logging (Colorado Natural Heritage Program, 2005). Currently, all mature lodgepole pine  
11 stands in the study area have some degree of infestation from the recent MPB epidemic.

12 The future condition and regeneration of lodgepole pine forest surrounding the study area will  
13 continue to change as the USFS implements the Ophir Mountain Forest Health and Fuels  
14 Project, which will consist of additional timber harvest and clear cutting in the immediate  
15 vicinity of the proposed Iron Springs alignment (timber harvest units are shown on **Figure 4**). For  
16 mapping purposes, areas that were recently logged to reduce accumulating fuel loads but still  
17 contain some lodgepole pine forest have been classified as “open canopy lodgepole pine with  
18 grass/forb.” Areas that contain more dense stands of lodgepole pine with a low diversity of  
19 understory species due to shade have been classified as “lodgepole pine forest.” The mosaic of  
20 different stand density and canopy cover in the study area is due to the MPB epidemic and  
21 the recent efforts by the USFS to clear dead and dying trees and expedite forest regeneration.

22 **Aspen Mixed Conifer Community**

23 Aspen (*Populus tremuloides*) forests are shade-intolerant mid-seral ecological communities and  
24 typically occur at elevations ranging from 6,000 feet to 10,500 feet. Within the study area, aspen  
25 are typically found adjacent to the existing Blue River Bikeway on the cooler north facing slopes  
26 where soil moisture is adequate and small drainages provide for mesic soil conditions. In  
27 addition, stands of aspen are found on the periphery of the lodgepole pine forest community.  
28 These stands typically have a higher conifer component. Areas within the study area that have  
29 already been logged contain small stands of aspen and lodgepole pine intermixed with areas of  
30 the grass/forb and mountain sagebrush (*Artemisia tridentata* ssp. *vaseyana*).

31 **Grass/Forb and Shrub Community**

32 The grass/forb and shrub community consists of non-forested meadows that are dominated by  
33 native and nonnative grasses, forbs, and mountain sagebrush, which is the dominant native  
34 shrub in this community. Common native grass species include western wheatgrass  
35 (*Pascopyrum smithii*), junegrass (*Koeleria macrantha*), ricegrass (*Achnatherum hymenoides*), and  
36 bluebunch wheatgrass (*Pseudoroegneria spicata*). Other grasslands dominated by introduced  
37 species occur in disturbed areas, such as habitat directly adjacent to SH 9. The grass/forb and  
38 shrub community also includes areas that have been recently logged or clear cut.

39 **Wetlands**

40 The wetlands community is primarily found adjacent to the existing SH 9 alignment and is  
41 dominated by emergent herbaceous vegetation with some areas of mature woody vegetation,  
42 such as willows (*Salix* sp). Wetlands within the study area generally occur in depressional  
43 features or along small intermittent drainages formed by periodic flood events and roadside  
44 drainage. The largest wetland complex is found at the southern end of the study area where a  
45 large fen/wet meadow complex is located near Dillon Reservoir. This community is dominated



1 by herbaceous vegetation such as water sedge (*Carex aquatilis*), Baltic rush (*Juncus balticus*),  
2 and tufted hairgrass (*Deschampsia caespitosa*). This large wetland complex is primarily  
3 supported by groundwater discharge and drainage from the surrounding hillside. Detailed  
4 information on wetlands can be obtained from Appendix A8, *Wetlands Technical Memorandum*,  
5 of the EA.

## 6 STATE LISTED THREATENED AND ENDANGERED SPECIES

7 Species that are listed by the CPW as endangered, threatened, or of special concern were  
8 obtained by accessing the Natural Diversity Information Source on 3/12/13  
9 (<http://ndis.nrel.colostate.edu>). The list that was provided includes:

10 **Bald Eagle** (*Haliaeetus leucocephalus*)—State Special Concern. Habitat includes reservoirs and  
11 rivers. In winter, they may also occur locally in semideserts and grasslands. Habitat does exist  
12 within the study area. This species may be impacted by this project. This species is addressed in  
13 the next section and in the Biological Evaluation (Appendix B). This species may be impacted by  
14 this project.

15 **Boreal toad** (*Bufo boreas*)—State Endangered. The toad typically lives in damp conditions in the  
16 vicinity of marshes, wet meadows, streams, beaver ponds, glacial kettle ponds, and lakes  
17 interspersed in subalpine forest (lodgepole pine, Engelmann spruce, subalpine fir, and aspen).  
18 Habitat does exist within the study area. This species may be impacted by this project.

19 **\*Canada lynx** (*Lynx canadensis*)—State Endangered, Federal Threatened - Uneven-aged stands  
20 with relatively open canopies and well-developed understories. The species is addressed in the  
21 Threatened and Endangered Species Technical Memorandum (Appendix A11) and in the  
22 Biological Assessment (Appendix B).

23 **Plains Sharp-tailed Grouse** (*Tympanuchus phasianellus jamesii*)—State Endangered. Occurs in  
24 Gambel oak and other shrublands lacking conifers (Hoag and Braun, 1990). This habitat type  
25 does not exist within the study area, nor will it be impacted by the proposed project. The project  
26 area is outside the grouse's current range. There will be no impact to this species.

27 **\*Southwestern Willow Flycatcher** (*Empidonax trailii extimus*)—State Endangered, Federal  
28 Endangered. Thickets, scrubby and brushy areas, open second growth, swamps, and open  
29 woodland. The subspecies *extimus*' range, as recognized by the USFWS (2002) and CPW  
30 ([http://ndis.nrel.colostate.edu/plugins/co\\_maps/040828.jpg](http://ndis.nrel.colostate.edu/plugins/co_maps/040828.jpg)), does not extend into Summit  
31 County, Colorado. Furthermore, the USFWS considers suitable habitat that would require a  
32 survey to consist of at least 0.25 acre of dense, multilayer vegetation, at least 6 feet in height  
33 and associated with riparian habitats along streams or other wetlands (USFWS, 2002). Because  
34 this habitat type does not exist in the project area, and therefore will not be impacted, and  
35 because the project is outside the range of the subspecies of concern, no impacts to the  
36 Southwestern Willow Flycatcher would be expected.

37 **\*North American wolverine** (*Gulo gulo luscus*)—State Endangered, Federal Proposed.  
38 Wolverines are animals of boreal forests and tundra. The species is addressed in the Threatened  
39 and Endangered Species Technical Memorandum (Appendix A11) and in the Biological  
40 Assessment (Appendix B).

41 **\*Mexican Spotted Owl** (*Strix occidentalis lucida*)—State Threatened, Federal Threatened.  
42 Basically intolerant of even-age forest management practices (USFWS Federal Register, 1994).  
43 Requires cool summer roosts (Barrows, 1981; Ganey and others, 1993), such as near canyon  
44 bottoms, in dense forests, on shady cliffs or in caves (Ganey and others, 1988). The species is

1 addressed in the Threatened and Endangered Species Technical Memorandum (Appendix A11).  
2 The Owl does not occur near the project area; appropriate habitat will not be affected.

3 **Northern river otter** (*Lutra canadensis*)—State Threatened. The species requires permanent  
4 water of relatively high quality and with an abundant food base of fish or crustaceans. This  
5 habitat type does not exist within the study area, nor will it be impacted by the proposed  
6 project. There will be no impact to this species.

7 **Greater Sandhill Crane** (*Grus Canadensis tabida*)—State Special Concern. Breeding birds are  
8 found in parks with grassy hummocks and watercourses, beaver ponds, and natural ponds lined  
9 with willows or aspens (Natural Diversity Information Source, 2013). This habitat type does not  
10 exist within the study area, nor will it be impacted by the proposed project. The project area is  
11 outside the crane’s current range. There will be no impact to this species.

12 **Northern leopard frog** (*Rana pipiens*)—State Special Concern. Typical habitats include wet  
13 meadows and the banks and shallows of marshes, ponds, glacial kettle ponds, beaver ponds,  
14 lakes, reservoirs, streams, and irrigation ditches. Habitat does exist within the study area. This  
15 species may be impacted by this project.

16 **Northern pocket gopher** (*Thomomys talpoides*)—State Special Concern. They are found in many  
17 different habitat types including agricultural and pasture lands, semidesert shrublands, and  
18 grasslands at lower elevations upwards into alpine tundra. Habitat does exist within the study  
19 area. This species may be impacted by this project.

20 **Peregrine Falcon** (*Falco peregrinus*)—State Special Concern. Breeding pairs nest on cliffs and  
21 forage over adjacent coniferous and riparian forests. This habitat type does not exist within the  
22 study area, nor will it be impacted by the proposed project. There will be no impact to this  
23 species.

24 **\*Greater Sage Grouse** (*Centrocercus urophasianus*)—State Special Concern, Federal Candidate.  
25 It inhabits sagebrush shrublands. In summer, native or cultivated meadows, grasslands, aspen,  
26 and willow thickets adjacent to or interspersed with sagebrush are frequently used. This habitat  
27 type does not exist within the study area, nor will it be impacted by the proposed project. The  
28 project area is outside the grouse’s current range. There will be no impact to this species.

29 *\*These species have been addressed in the Biological Assessment submitted to the*  
30 *U.S. Fish and Wildlife Service. It was determined that neither the Proposed Project nor*  
31 *the No Action Alternative would have an adverse effect on the lynx and neither*  
32 *alternative would lead to jeopardizing the continued existence of the wolverine. No other*  
33 *federally listed species would be affected by either of the alternatives. Please see that*  
34 *document for further details. They will not be further discussed herein.*

35 Of the species that are not federally listed, the Bald Eagle, boreal toad, northern leopard frog,  
36 and northern pocket gopher may all exist in the area and may be impacted by the project.

37

1 *Bald Eagle*



**Description:** Adult Bald Eagles differ from other eagles in having both a white head and white tail. Bald Eagles have proportionately larger heads and bills than do Golden Eagles. A Bald Eagle's neck is also shorter, and its tail is longer than in other white-tailed eagles. In the immature, the white coloration is confined to the base of the primaries and the base of the tail.

Clutch size is 1 to 3 (usually 2). Incubation lasts about 5 weeks. The eggs are tended to by both sexes. Eaglets first fly at 10 to 13 weeks, which, when cared for by adults, may remain around the nest for

11 several weeks after fledging. Generally, breeding starts when the birds are 5 to 6 years old.  
12 Adults may not lay eggs every year.

13 **Threats:** Once a common sight in much of the continent, the Bald Eagle was severely affected in  
14 the mid-twentieth century by a variety of factors. These factors included widespread loss of  
15 suitable habitat and illegal shooting, the latter of which was described as "the leading cause of  
16 direct mortality in both adult and immature Bald Eagles," according to a 1978 report in the  
17 Endangered Species Technical Bulletin. In 1984, the National Wildlife Federation listed hunting,  
18 power line electrocution, and collisions in flight as the leading causes of eagle deaths. Bald Eagle  
19 populations have also been negatively affected by oil, lead, and mercury pollution and by  
20 human and predator intrusion (Milloy, 2006).

21 **Range:** Bald Eagles live throughout North America, from Alaska to Newfoundland, and from the  
22 tip of Florida to southern California (Kingery, 1998). Historically, Bald Eagles were first found  
23 nesting in Colorado in 1889, although Oregon-bound settlers saw them in 1839 on the Blue River  
24 in Grand County (Marsh, 1931) Because of shooting, nest disturbance, loss of nest trees and  
25 nesting habitat, plus contamination of food sources by pesticides, the Bald Eagle population fell  
26 dramatically (Kingery, 1998). In 1967 the USFWS listed the eagle as endangered under the  
27 Endangered Species Preservation Act of 1966, and later under the Endangered Species Act of  
28 1973 (Buehler, 2000). Increased protection and the ban on some pesticides, DDT, in particular,  
29 has allowed the Bald Eagle to come back from the brink of extinction. The recovery has been so  
30 dramatic that in 2007 the USFWS removed the eagle from the list of threatened and endangered  
31 species.

32 According to CPW, the project location is found with summer range and winter range for the  
33 Bald Eagle. A roost site has also been located on the east side of Dillon Reservoir near Swan  
34 Mountain Road. There are no known nest sites in or around the project area. The nearest known  
35 nest is found approximately 31 miles northwest of Dillon Reservoir near Kremmling, Colorado.  
36 However, because the reservoir does provide foraging opportunities throughout the year, Bald  
37 Eagles may frequent the area on occasion.

38 *Boreal Toad*

39 **Description:** Adult boreal toads vary in coloration from dark  
40 brown or black to olive with a distinct white or pale yellow  
41 mid-dorsal stripe. This stripe is most evident in mature  
42 females, but it is not always visible, especially if the toad is  
43 cold (Keinath and McGee, 2005). The throat is pale, relative  
44 to the rest of the body, and the sides and belly are covered  
45 with many dark spots, but no yellow spots. The skin is  
46 typically dry and warty. A large, oval glandular lump (parotid



1 gland) is present behind each eye. Boreal toads lack distinct bony ridges around the eyes (that  
2 is, cranial crests). Males develop thickened, dark areas on the inner surfaces of their innermost  
3 front toes (“thumbs”) during the breeding season; these pads may become less distinct after the  
4 breeding season. These nuptial pads help the male grip the female during amplexus. Adult  
5 females range from 3 to 4 inches (75 to 100 millimeters [mm]) in length from snout to vent,  
6 while adult males are generally smaller, ranging from 2.4 to 3.2 inches (60 to 80 mm) in length.  
7 Boreal toads have no vocal sacs. During the breeding season, adult males make soft chirping  
8 sounds, a recording of which can be found on the Colorado Herptofaunal Atlas Web site  
9 (<http://ndis.nrel.colostate.edu/herpatlas/coherpatlas/>).

10 Eggs of boreal toads are black above and white below, or completely black. The ovum average  
11 1.5 to 1.8 mm in diameter, but they are encased in two jelly layers that make them appear to be  
12 approximately 5 mm in diameter (Livezy and Wright, 1947). Healthy females have two functional  
13 oviducts, so eggs normally occur in two strands that often appear to be a single zigzag row.  
14 Encased in their gelatinous sheaths, eggs typically are deposited in shallow water (Samollow,  
15 1980; Olson, 1989; Koch and Peterson, 1995; Hammerson, 1999). They may become tangled in  
16 vegetation or covered by silt and debris. The number of eggs per clutch varies widely across the  
17 range of boreal toads in North America and is loosely correlated with body size (Stebbins and  
18 Cohen, 1995). In Colorado, clutch sizes from three different populations ranged from 3,200 to  
19 over 10,800 eggs per clutch, with clutch size decreasing insignificantly from south to north (Livo  
20 1999).

21 Boreal toad tadpoles are typically black or dark brown in color, including the fins. They range in  
22 size from 6 mm when they hatch to 34 to 37 mm (1.3 to 1.5 inches) when they are fully  
23 developed. Their eyes are not on the sides of their head as in some amphibian species (for  
24 example, Western chorus frog [*Pseudacris triseriata*]); instead, they are positioned about  
25 halfway between the midline and the lateral edge of the head (Nussbaum and others, 1983;  
26 Baxter and Stone, 1985; Koch and Peterson, 1995; Hammerson, 1999).

27 **Habitat:** Boreal toads live in a wide range of habitats in western North America: wetlands,  
28 forests, woodlands, sagebrush, meadows, and floodplains in the mountains and valleys  
29 (Campbell, 1970; Black, 1971; Stebbins, 1985). While they primarily use wetland habitats, boreal  
30 toads may be observed in other habitats during dispersal to and from breeding sites. Although  
31 they have been observed in a wide range of elevations (from sea level to near or above tree  
32 line), boreal toads generally occur between 7,500 and 12,000 ft. in USFS Region 2 (Campbell,  
33 1970; Stebbins, 1985; Livo and Yackley, 1997; Hammerson, 1999). This species is usually found in  
34 wetlands near ponds, lakes, reservoirs, rivers, and streams, and it is typically less common in  
35 densely forested areas (Campbell, 1970; Hammerson 1999). The wetland habitat classification  
36 system of Cowardin and others (1979) defines the following wetland classes: aquatic bed,  
37 streambed, rocky shore, unconsolidated shore, emergent wetland (persistent and non-  
38 persistent), scrub-shrub wetland, and forested wetland. These wetland classes are likely to be  
39 used by boreal toads based on the general habitat use patterns described by Campbell (1970).  
40 Boreal toads are likely to be found within these classes in Riverine, Lacustrine, and Palustrine  
41 wetland systems. The terrestrial habitat classification system of Grossman and others (1998)  
42 defines the following habitat classes that boreal toads are likely to use: Herbaceous, Forest,  
43 Woodland, and Shrubland. In Wyoming, boreal toads use wet habitats in foothills, montane, and  
44 subalpine areas, and they are seldom far from water (Baxter and Stone, 1985). They may be  
45 found in all riparian habitat types (Gerhart and Olson, 1982).

46 **Threats:** Specific threats to boreal toads on National Forest System lands include disease,  
47 decreased water and air quality, timber harvest, livestock grazing, fire and fire management  
48 activities, environmental pollutants, non-native species and their management, habitat



1 development and fragmentation, harvest and commerce, and finally the lack of information on  
2 specific populations (Keinath and McGee, 2005).

3 **Range:** The range of the boreal toad currently extends from southern Alaska through British  
4 Columbia, Washington, Oregon, and northern California and east through Idaho, western  
5 Montana, western and south-central Wyoming, Nevada, the mountains and higher plateaus of  
6 Utah, and portions of the mountains of Colorado. It has not been recorded at low elevations  
7 (less than 6,000 feet) east of western Wyoming (Baxter and Stone, 1985), western Montana, and  
8 central Colorado (Stebbins, 1985). New Mexico populations are now thought to be extinct  
9 (Degenhardt and others, 1996; NatureServe, 2005).

10 As of August 2002, the boreal toad was known to occur in 14 Colorado counties (Chaffee, Clear  
11 Creek, Eagle, Grand, Gunnison, Hinsdale, Jackson, Larimer, Mesa, Mineral, Park, Pitkin, Routt,  
12 and Summit) and two counties in southern Wyoming (Albany and Carbon). This is a substantial  
13 decrease in the historical documented distribution. However, there is some evidence that boreal  
14 toads may still occur in Boulder, Conejos, Garfield, Gilpin, Lake, Rio Blanco, and Saguache  
15 Counties in Colorado (Keinath and McGee, 2005).

16 Boreal toads have been documented in Summit County approximately 4 miles away in North  
17 Tenmile Creek and further south in Cucumber Gulch. At the time of this writing, no known  
18 surveys for the toad have been conducted within the project area, but habitat conducive to their  
19 breeding is present, particularly at the fen area on the southeastern edge of the project  
20 footprint. Until such surveys are completed during the appropriate time of year, usually  
21 between June 15 and June 30, its presence will be assumed.

### 22 *Northern Leopard Frog*

23 **Description:** The northern leopard frog is a slender,  
24 medium sized ranid, sometimes referred to as the  
25 “meadowfrog” because of its preference for grassy  
26 habitats (Hunter and others, 1999). It is one of about  
27 20 sibling species making up the *Rana pipiens*  
28 complex that ranges over much of North and Central  
29 America. Members of the complex, including the  
30 northern leopard frog, are commercially collected  
31 and shipped worldwide for laboratory use. The  
32 northern leopard frog is not considered an obligate  
33 vernal pool species in New England (Colburn, 1995;  
34 Kenny, 1995), primarily because it prefers lakes, ponds, and slow-moving streams for breeding  
35 (Hunter and others, 1999; Klemens, 1993). Its life cycle includes an aquatic larval stage and  
36 semi-terrestrial juvenile and adult stages.



37 Klemens (1993) reported body lengths (snoutvent) of northern leopard frogs from a Connecticut  
38 sampling (sample size=23) to be 51 to 65 mm for males (average 57.2 mm) and 53 to 65 mm for  
39 females (average 57 mm). Hunter and others (1999) reported slightly larger sizes (data possibly  
40 from a more northerly population), with male and female snoutvent lengths ranging from 52 to  
41 82 mm and 54 to 95 mm, respectively.

42 **Habitat:** Northern leopard frogs prefer the banks and shallow portions of marshes, wet  
43 meadows, ponds, lakes, and streams particularly where rooted aquatic vegetation is present  
44 (Hammerson, 1999). They are wide ranging species known to elevations of 11,000 feet.  
45 Northern leopard frogs can cover distances up to 3 miles and feed on insects, spiders, and  
46 worms. Tadpoles are herbivorous scavengers (Hammerson, 1999). In Colorado, eggs are laid

1 mainly in early spring at low elevations, in late spring in the mountains (Hammerson, 1999). Eggs  
2 are laid and larvae develop in shallow, still, permanent water (typically), generally in areas well  
3 exposed to sunlight. Generally eggs are attached to vegetation just below the surface of the  
4 water.

5 **Range:** The range of the leopard frog extends from southern Canada and northern United States  
6 south to Maryland, West Virginia, Kentucky, northern Illinois, extreme northwestern Missouri,  
7 Nebraska, New Mexico, Colorado, Arizona, and eastern California (Stebbins, 1985). In Colorado,  
8 elevational range extends from below 3,500 feet in northeastern Colorado to above 11,000 feet  
9 in southern Colorado.

10 Northern leopard frogs are known to exist in Summit County within a mile of the project  
11 footprint, and habitat conducive to their breeding is present, particularly at the fen area on the  
12 southeastern edge of the project footprint. At the time of this writing, no known surveys for the  
13 toad have been conducted in the project area. Until such surveys are completed during the  
14 appropriate time of year, usually between June 15 and June 30, its presence will be assumed.

### 15 *Northern Pocket Gopher*

16 **Description:** Northern pocket gophers, like other pocket  
17 gophers, are rarely seen, as they spend most of their time  
18 underground. Pocket gophers are named for their external  
19 fur-lined pouches that are used to carry food. The  
20 northern pocket gopher is a medium sized, stocky rodent  
21 with a short neck, small, flattened head, small ears, small  
22 eyes, large-clawed front feet, and visible incisors. It has  
23 brown to yellowish-brown short, soft fur with pale  
24 underparts. Adult northern pocket gophers weigh  
25 between 60 and 160 grams (2.1 to 5.6 ounces) and have a  
26 total body length of 165 to 260 mm (6.5 to 10.2 inches) (MacMahon, 1999).



27 **Habitat:** Northern pocket gophers are found in many different habitat types including  
28 agricultural and pasture lands, semidesert shrublands, and grasslands at lower elevations  
29 upwards into alpine tundra. It prefers deep soils along streams and in meadows and cultivated  
30 fields, but it is also found in rocky soils and clay. Young are born in a grass- or leaf-lined nest in a  
31 natal chamber within the underground burrow system (MacMahon, 1999).

32 Mating usually occurs from March to mid-June, and litters usually range from 4 to 7 pups  
33 (Armstrong and others, 2011).

34 Northern pocket gophers are active throughout the year. They do not hibernate but may be  
35 inactive in winter and midsummer for brief periods. Most burrowing activity occurs in spring and  
36 fall when soil is loose. While active during all times of the day and night, their activity peaks at  
37 dawn and dusk (Armstrong and others, 2011).

38 **Range:** Northern pocket gophers range throughout most of the states in the northern half of the  
39 western United States. In Colorado, the pocket gopher can be found in most habitats above  
40 5,000 feet except in the eastern plains counties (Armstrong and others, 2011).

41 Because of its wide distribution and various habitat types, its presence in the project area will be  
42 assumed.

1 **PROJECT IMPACTS**

2 *No Action Alternative*

3 Construction of the No Action Alternative would result in loss of habitat in terms of vegetation  
 4 and possible species composition. Direct impacts to existing vegetation and grass/forb and  
 5 shrub communities within the No Action Alternative would result in the removal of vegetation  
 6 and increase in impervious surface where widening along the existing SH 9 corridor and  
 7 realignment of the Blue River Bikeway is proposed. A total of 2.00 acres of vegetation would be  
 8 permanently removed as a result of widening on the existing SH 9 alignment. In addition, a total  
 9 of 1.01 acres of vegetation would be permanently impacted from the bikeway relocation. Most  
 10 of these improvements would affect the grass/forb with shrub community, which consists of  
 11 roadside habitat as well as areas that have been recently logged. **Table 3** and **Table 4** summarize  
 12 permanent and temporary impacts to vegetation communities from the No Action Alternative.  
 13 Mitigation measures listed in the SH 9 Frisco to Breckenridge EIS will be implemented to offset  
 14 impacts to vegetation resources (CDOT and FHWA, 2004a).

15 **Table 3 Roadway Vegetation Impacts—No Action Alternative**

<b>Vegetation Community Type</b>	<b>Permanent Acre of Impact (Impervious Surface)</b>	<b>Temporary Impacts (Acre)*</b>
Lodgepole Pine Forest	0.61	2.62
Aspen/Mixed Conifer	0.02	0.07
Open Canopy Lodgepole Pine with Grass/Forb	0.17	1.24
Grass/Forb with Shrub	1.20	4.21
Grass/Forb and Aspen/Mixed Conifer	0	1.17
Sagebrush with Grass/Forb	0	0.10
<b>Total Impacted Acreage</b>	<b>2.00</b>	<b>9.41</b>

\*Temporary impacts generally occur from the short-term disturbance necessary for activities like construction access.

16 **Table 4 Bikeway Alignment Vegetation Impacts—No Action Alternative**

<b>Vegetation Community Type</b>	<b>Permanent Acre of Impact (Impervious Surface)</b>	<b>Temporary Impacts (Acre)</b>
Lodgepole Pine Forest	0.17	1.10
Aspen/Mixed Conifer	0.20	0.72
Open Canopy Lodgepole Pine with Grass/Forb	0	0.05
Grass/Forb with Shrub	0.64	4.03
Grass/Forb and Aspen/Mixed Conifer	0	0
Sagebrush with Grass/Forb	0	0
<b>Total Impacted Acreage</b>	<b>1.01</b>	<b>5.90</b>

17

The construction of the No Action Alternative would also increase impervious surfaces, thereby increasing runoff and exposing the surrounding vegetation to higher levels of pollutants. Soil disturbance from construction equipment would also create favorable conditions for noxious weeds to introduce and establish, or to further spread.

To minimize impacts to wildlife, the following measures have been proposed:

- Minimize tree removal and disturbance to native plant communities.
- Stabilize disturbed areas and re-establish native vegetation communities following construction.

*Proposed Action*

Most of the habitat impacts due to the Proposed Action would be to the aspen/mixed conifer community, lodgepole pine forest, and areas dominated by grass/forbs and mountain sagebrush. In addition, the permanent conversion of habitat to impervious surface would reduce the amount of habitat available for future aspen and lodgepole pine forest regeneration. **Table 5** summarizes permanent and temporary impacts to vegetation communities from the Proposed Action within the study area.

**Table 5            New Roadway Alignment and Dickey Day Trail Connection  
Improvements, Vegetation Impacts—Proposed Action**

<b>Vegetation Community Type</b>	<b>Permanent Acre of Impact (Impervious Surface)</b>	<b>Temporary Impacts (Acre)*</b>
Lodgepole Pine Forest	1.50	6.51
Aspen/Mixed Conifer	2.57	2.98
Open Canopy Lodgepole Pine with Grass/Forb	0.01	0.67
Grass/Forb with Shrub	1.97	6.13
Grass/Forb and Aspen/Mixed Conifer	0.08	1.21
Sagebrush with Grass/Forb	0.56	0.95
<b>Total Impacted Acreage</b>	<b>6.69</b>	<b>18.45</b>

\*Temporary impacts generally occur from the short-term disturbance necessary for activities like construction access, which will include temporary widening to construct the new roadway alignment.

The construction of the Proposed Action would increase impervious surfaces, thereby increasing runoff and exposing the surrounding vegetation to higher levels of pollutants. Soil disturbance from construction equipment would also create favorable conditions for noxious weeds to introduce and establish, or to further spread. The addition of new winter maintenance practices along the new roadway alignment, for example, liquid deicers, traction materials) could also indirectly impact vegetation. However, under the Proposed Action, 1.76 miles of the existing SH 9 roadway would be reduced from a standard 36-foot cross section to a 12-foot paved path (at the existing grade) and would revert to recreational use. This new 12-foot paved recreational trail would not be maintained in the winter. It’s estimated that approximately 3.1 acres of the existing SH 9 alignment will be reclaimed (impervious surface removed) and revegetated with native grasses/forbs and native trees and shrubs where appropriate.



1 IMPACTS TO TARGET SPECIES

2 There are no known Bald Eagle nest sites within the proposed project area, and implementation  
3 is not expected to hinder the species' ability to travel to and from foraging areas and/or alter  
4 courtship and nesting behaviors. There is potential for individual eagles to use the project area  
5 for foraging purposes. However, Bald Eagles are known to have relatively large ranges in which  
6 to forage (NatureServe, 2010), and the proposed project area would make up a minor portion of  
7 either the summer or winter range of the eagles. The roost site found east of the project has  
8 been known to be used by individuals but does not provide sufficient cover and is located too  
9 near to human activity to function as a communal night or winter roost. The project would not  
10 be expected to increase the human activity or disturbance near the roost, which would continue  
11 to function as it historically has. Additionally, improved water quality that would result from the  
12 project may result in better quality prey species found within Dillon Reservoir. Water quality  
13 would be expected to improve because of the following actions.

14 Permanent best management practices are being incorporated into the roadway design. These  
15 include, but are not limited to, approximately four stormwater runoff/sediment capture basins,  
16 riprap check dams along vegetated swales, and adding riprap to outfalls for concentrated flows.  
17 Basins have been sized approximately to capture both Water Quality Capture Volume and an  
18 added 20 percent volume for sediment accumulation from sanding operations. Because of these  
19 actions, it has been determined that the proposed project may adversely impact individuals but  
20 not likely to adversely impact the species as a whole.

21 Based on the information outlined above, it appears that the main threat to the boreal toad is  
22 loss of breeding habitat in the fen at the south end of the project. By cantilevering the proposed  
23 highway over the fen, the impacts would be lessened as compared to those of the No Action  
24 Alternative. This would preserve as much habitat as possible for the toad. Surveys will be  
25 completed prior to construction to determine presence or absence of the toad. If the toads,  
26 tadpoles, or eggs are found, construction activities will not begin in toad habitat until the young  
27 have metamorphed into fully mobile adults. Because of these actions, it has been determined  
28 that the proposed project may adversely impact individuals but not likely to adversely impact  
29 the species as a whole.

30 Based on the information outlined above, it appears that the main threat to the northern  
31 leopard frog is loss of breeding habitat in the fen at the south end of the project. By  
32 cantilevering the proposed highway over the fen, the impacts would be lessened as compared  
33 to those of the No Action Alternative. This would preserve as much habitat as possible for the  
34 frog. Surveys will be completed prior to construction to determine the presence or absence of  
35 the frog. If the frogs or eggs are found, construction activities will not begin in toad habitat until  
36 the young have metamorphed into fully mobile adults. Because of these actions it has been  
37 determined that the proposed project may adversely impact individuals but not likely to  
38 adversely impact the species as a whole.

39 Based on the information outlined above, it appears that the main threat to the northern pocket  
40 gopher is loss of habitat. This may be detrimental to the gopher. By decreasing the footprint of  
41 the highway by 0.5 miles and reclaiming the land around the current alignment as part of the  
42 recreation path portion, more area would be available for the gopher to forage, mate, and  
43 disperse than with the No Action Alternative. The impacted area is also very small when  
44 compared to the vastness of suitable habitat in the area that the gopher could exist in. Because  
45 of these actions, it has been determined that the proposed project may adversely impact  
46 individuals but not likely to adversely impact the species as a whole.

1 **CONCLUSION**

2 Based on the location of the project, the type of project and the conservation measures  
3 proposed, it has been determined that this project may affect, but is not likely to adversely  
4 impact the species as a whole for the Bald Eagle, boreal toad, northern leopard frog, or the  
5 northern pocket gopher. The project is expected to have no effect on any other state designated  
6 species.

7 *Agencies Contacted*

- 8 • U.S. Fish and Wildlife Service, U.S. Forest Service, Colorado Parks and Wildlife.

9 *Date of Data Used*

- 10 • CPW State Listed Species and Species of Concern, accessed on 3/12/13. SH 9 Frisco to  
11 Breckenridge Improvement Project EA, 2002. SH 9 vegetation map developed for this EA  
12 by FHU, 2013.

13 *Context Summary*

14 By comparing the existing habitat types with the requirements of the species of interest, we  
15 were able to eliminate most species as being affected by this proposed project. The species that  
16 remained were subjected to more scrutiny on habitat needs and impacts. A literature search  
17 was completed for projects that had been proposed in the immediate area (Ophir Mountain  
18 Forest Health and Fuels Management and the No Action Alternative [SH 9]). A query for new  
19 information was solicited from the resource agencies and new and different impacts from those  
20 discussed in the earlier documents were analyzed. Most wildlife impacts stemmed from the  
21 continuing MPB infestation altering the quality of the habitat. There was also a change in the  
22 recreational use of the area. These changes included the removal of existing SH 9 in lieu of a  
23 bikeway path and the installation of underpasses for the path, which may also be used by small  
24 to mid-sized animals and the installation of a dedicated wildlife crossing under the proposed  
25 alignment of SH 9. An updated list of state listed species was also obtained from CPW website  
26 (<http://ndis.nrel.colostate.edu>).

27 *Impact Summary*

28 A determination was reached that the proposed project may adversely impact individuals, but  
29 not likely to adversely affect the species as a whole for the boreal toad, northern leopard frog,  
30 and the northern pocket gopher. These determinations are based on habitat types and  
31 presence/absence surveys. Surveys were conducted in June and July 2013. No individuals or  
32 evidence of presence was found. However, habitat that could be used by these species is  
33 present. It should be noted that many of the habitats for these species are located at the fen  
34 area. The Proposed Action would affect 0.001 acre of fen as opposed to the No Action  
35 Alternative, which would impact 0.106 acre of fens. This serves to lessen the impact for many of  
36 the special status species.

37 *Result of Evaluation*

38 Minimization measures are proposed below.

39 **Impact Significant Determination**

40 Issue not present

41 Issue present, but no impact

1 Issue present, no impact after project modification

2 Issue present, beneficial impacts

3 Issue present, negative impact, no mitigation

4 Issue present, negative impact, mitigation needed

5 **Required Project Modifications to Avoid Impacts**

6 While avoidance of all impacts may not be possible due to the current alignment of the highway  
7 and the lack of engineering options for the proposed alignment, the impacts can be minimized  
8 by:

9 1) Conduct presence/absence surveys at the appropriate time of year.

10 2) Alter construction schedule to avoid breeding seasons.

11 3) Restrict refueling and, if possible, equipment repair to more than 100 feet from fen  
12 area.

13 **Permits**

14 None required

15 **Mitigation Description**

16 No mitigation is required for the species addressed in this technical memorandum, but the  
17 minimization measures will be required to lessen the impact to these species:

18 *Bald Eagle*

19 Protect water quality by incorporating permanent water quality best management practices into  
20 the roadway design.

21 *Northern Leopard Frog*

22 Survey for presence between June 15 and July 15 prior to construction. If no survey is  
23 conducted, then presence must be assumed and no work would be allowed in any wetland area  
24 between March and September.

25 If a survey is conducted and egg masses or tadpoles are found, then no work would be allowed  
26 in any occupied wetland area between March and September. If no egg masses or tadpoles are  
27 found, work may continue.

28 *Boreal Toad*

29 Survey for presence between June 15 and July 15 prior to construction. If no survey is  
30 conducted, then presence must be assumed, and no work would be allowed in any wetland area  
31 between March and September.

32 If a survey is conducted and egg masses or tadpoles are found, then no work would be allowed  
33 in any occupied wetland area between March and September. If no egg masses or tadpoles are  
34 found, work may continue.

35 *Northern Pocket Gopher*

36 Use previously developed areas for staging and storage of material to the extent possible.

1 REFERENCES

- 2 Armstrong, D. M., J. P. Fitzgerald, C. A. Meaney. 2011. *Mammals of Colorado*. 2nd Edition.  
3 Denver Museum of Nature and Science. University Press, Boulder, Colorado.
- 4 Barrows, C.W. 1981. Roost selection by spotted owls: An adaptation to heat stress. *Condor*  
5 83:302-309.
- 6 Baxter, G.T. and M.D. Stone. 1985. *Amphibians and reptiles of Wyoming*. 2nd Edition. Wyoming  
7 Game and Fish Department, Cheyenne, Wyoming.
- 8 Baxter, G.T. and M.D. Stone. 1995. *Fishes of Wyoming*. Wyoming Game and Fish Department  
9 Cheyenne, Wyoming.
- 10 Black, J.H. 1971. The toad genus Bufo in Montana. *Northwest Science* 45:156-162.
- 11 Brown, B. T., P. L. Warren, and L. S. Anderson. 1988. Status of bald eagles in the Rio Yaqui  
12 drainage of Sonora, Mexico. Page 321 in Glinski et al., eds. Proc. Southwest raptor management  
13 symposium and workshop. Nat. Wildl. Fed. Sci. and Tech. Ser. No. 11.
- 14 Buehler, D.A. 2000. Bald Eagle (*Haliaeetus leucephalus*). In *The Birds of North America*, No. 506  
15 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, Pennsylvania.
- 16 Campbell, J.B. 1970. Life history of Bufo boreas boreas in the Colorado Front Range. Ph.D.  
17 Dissertation, University of Colorado, Boulder, Colorado.
- 18 Colburn, E.A. 1995. *Certified: A Citizen's Step-By-Step Guide to Protecting Vernal Pools*. 6<sup>th</sup> ed.  
19 Massachusetts Audubon Society, Lincoln, Massachusetts. March
- 20 Colorado Department of Transportation (CDOT) and Federal Highway Administration (FHWA).  
21 2004a. *State Highway 9 Frisco to Breckenridge Final Environmental Impact Statement and 4(f)*  
22 *Evaluation*. February. [Note: This document is an abbreviated Final EIS which incorporates the  
23 Draft EIS, constituting the complete Final EIS.]
- 24 Colorado Department of Transportation (CDOT) and Federal Highway Administration (FHWA).  
25 2004b. *State Highway 9 Frisco to Breckenridge Record of Decision*. May.
- 26 Colorado Natural Heritage Program (CNHP). 2005. Ecological System Descriptions and Viability  
27 Guidelines for Colorado. Colorado Natural Heritage Program, Colorado State University, Fort  
28 Collins, Colorado.
- 29 Cowardin, L.M., V. Carter, F.C. Golet, E.T. LaRoe. 1979. *Classification of wetlands and deepwater*  
30 *habitats of the United States*. USDI Fish and Wildlife Service, Washington, D.C.
- 31 Degenhardt, W.G., C.W. Painter, and A.H. Price. 1996. Amphibians and reptiles of New Mexico.  
32 University of New Mexico Press, Albuquerque, New Mexico. 431 pp.
- 33 Ganey, J.L., R.P. Balda, and R.M. King. 1993. Metabolic rate and evaporative water loss of  
34 Mexican spotted and great horned owls. *Wilson Bulletin* 105:645-656.
- 35 Gerhart, W.A. and R.A. Olson. 1982. *Handbook for evaluating the importance of Wyoming's*  
36 *riparian habitat to terrestrial wildlife*. Wyoming Game and Fish Department, Cheyenne,  
37 Wyoming.
- 38 Grossman, D.H., D. Faber-langendoen, A.S. Weakley, M. Anderson, P. Bourgeron, R. Crawford,  
39 K. Goodin, S. Landaal, K. Metzler, K. Patterson, M. Pyne, M. Reid, and L. Sneddon. 1998.  
40 *International classification of ecological communities: Terrestrial vegetation of the United States*.



- 1 Volume 1: The national Vegetation classification system: Development, status, and applications.  
2 The Nature Conservancy, Arlington, Virginia.
- 3 Hammerson, G.A. 1999. *Amphibians and reptiles in Colorado*. 2<sup>nd</sup> ed. University Press and  
4 Colorado Division of Wildlife, Niwot, Colorado.
- 5 Hunter, M.L., A. Calhoun, and M. McCollough. 1999. *Maine Amphibians and Reptiles*. The  
6 University of Maine Press; Orono, ME
- 7 Keinath, D. and M. McGee. 2005. *Boreal Toad (Bufo boreas boreas): a technical conservation  
8 assessment*. USDA Forest Service, Rocky Mountain Region.
- 9 Kenny, L.P. 1995. *Wicked Big Puddles: A Guide to the Study and Certification of Vernal Pools*.  
10 2nd ed. Reading Memorial High school and the Vernal Pool Association.
- 11 Kingery, Hugh, 1998. *Colorado Breeding Bird Atlas*. Colorado Bird Atlas Partnership with the  
12 Colorado Division of Wildlife. Denver, CO.
- 13 Klemens, M.W. 1993. *The amphibians and reptiles of Connecticut and adjacent regions*. State  
14 Geological Natural History Survey Connecticut, Bulletin 112.
- 15 Koch, E.D and C.R. Peterson. 1995. *The amphibians and reptiles of Yellowstone and Grant Teton  
16 National Parks*. University of Utah Press, Salt Lake City, Utah.
- 17 Livezey, R.L. and A.H. Wright. 1947. A synoptic key to the salientian eggs of the United States.  
18 *American Midlands Naturalist* 37:179-222.
- 19 Livo, L.J. 1999. *The role of predation in the early life history of Bufo boreas in Colorado*. Ph.D.  
20 Dissertation, University of Colorado, Boulder, Colorado.
- 21 Livo, L.J. and D. Yackley. 1997. Comparison of current with historical elevational range in the  
22 boreal toad, *Bufo boreas*. *Herpetological Review* 28:143-144.57
- 23 MacMahon, J. A. 1999. Northern Pocket Gopher (*Thomomys talpoides*). Pages 474-477 in D. E.  
24 Wilson and S. Ruff, editors. *The Smithsonian book of North American mammals*. Smithsonian  
25 Institution Press in association with the American Society of Mammalogists, Washington.
- 26 Marsh, T.G. 1931. *A history of the first records of all the birds reported to have been seen within  
27 the present boundaries of the state of Colorado prior to settlement*. Master's Thesis, Univ. of  
28 Denver
- 29 Milloy. 2006. "[Bald eagle](#)," *Fox News* July 6, 2006. Retrieved August 15, 2008.
- 30 Natural Diversity Information System. 2013. *Wildlife Greater Sandhill Crane Page*. Colorado  
31 State University. Fort Collins, Colorado.  
32 <http://ndis.nrel.colostate.edu/wildlifesp.aspx?SpCode=040701>
- 33 NatureServe. 2005. *NatureServe Explorer: An online encyclopedia of life*. Version 4.4. Arlington,  
34 Virginia. Accessed May 2005. <http://www.natureserve.org/explorer>
- 35 NatureServe. 2010. *NatureServe Explorer: An online encyclopedia of life [web application]*.  
36 Version 7.1. NatureServe, Arlington, Virginia. <http://www.natureserve.org/explorer>.
- 37 Nussbaum, R.A., E.D. Brodie, and R.M. Storm. 1983. *Amphibians and reptiles of the Pacific  
38 Northwest*. University of Idaho Press, Moscow, Idaho.
- 39 Olson, 1989. *Predation on breeding western toads (Bufo Boreas)*. *Copeia* 1989:391-397.
- 40 Samollow, P.B. 1980. *Selective mortality and reproduction in a natural population of Bufo  
41 boreas*. *Evolution* 34:18-39.

## CO Special Status Species for the State Highway 9 Iron Springs Alignment EA

---

- 1 Stebbins, R.C. 1985. *A field guide to western reptiles and amphibians*. 2<sup>nd</sup> edition. Houghton  
2 Mifflin Company; Boston, Massachusetts.
- 3 Stebbins, R.C. and N.W. Cohen. 1995. *A natural history of amphibians*. Princeton University  
4 Press, Princeton, New Jersey.
- 5 U.S. Department of Agriculture (USDA) Forest Service. 2011a. *Ophir Mountain Forest Health and  
6 Fuels Project Biological Assessment*. Dillon Ranger District, White River National Forest. Summit  
7 County, Colorado.
- 8 U.S. Department of Agriculture (USDA) Forest Service. 2011b. *Biological Evaluation and  
9 Management Indicator Species Report*. Dillon Ranger District, WRNF. Summit County, Colorado.
- 10 U.S. Fish and Wildlife Service (USFWS). 1994. ETWP; *90-Day Finding on A Petition to Remove the  
11 Mexican Spotted Owl from the List of Endangered and Threatened Wildlife*. 59 FR p. 15361-  
12 15367.
- 13 U.S. Fish and Wildlife Service (USFWS). 2002. *Southwestern Willow Flycatcher Recovery Plan*.  
14 USFWS Region 2. Albuquerque, New Mexico.