BIOLOGICAL RESOURCES TECHNICAL MEMORANDUM

April 2014

EB I-70 Peak Period Shoulder Lane

CATEGORICAL EXCLUSION

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Acronyms and Abbreviations

ALIVE	A Landscape Level Inventory of Valued Ecosystem Components
AVC	animal-vehicle collision
BGEPA	Bald and Golden Eagle Protection Act
BMPs	Best management practices
CDOA	Colorado Department of Agriculture
CFR	Code of Federal Regulations
CPW	Colorado Parks and Wildlife
CDOT	Colorado Department of Transportation
EO	Executive Order
ESA	Endangered Species Act
FHWA	Federal Highway Administration
IPaC	Information, Planning, and Conservation
LIZs	Linkage interference zones
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MP	Milepost
NEPA	National Environmental Policy Act
PEIS	Programmatic Environmental Impact Statement
ROD	Record of Decision
SWEEP	Stream and Wetland Ecological Enhancement Program
USACE	U.S. Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WOUS	Waters of the United States

Section 1. Purpose of the Memorandum

The Federal Highway Administration (FHWA), in cooperation with the Colorado Department of Transportation (CDOT), is preparing a Categorical Exclusion for proposed changes to the eastbound lanes of I-70 between approximately milepost (MP) 230 and MP 243, in Clear Creek County, Colorado. The proposed changes will improve operations and travel time reliability in the eastbound direction of I-70 in the study area. Additionally, the improvements will be consistent with the I-70 Mountain Corridor Programmatic Environmental Impact Statement (PEIS) Record of Decision (ROD), I-70 Mountain Corridor Context Sensitive Solutions process, and other commitments of the PEIS. The Proposed Action fits within the definition of "expanded use of existing transportation infrastructure in and adjacent to the corridor" as an element of the Preferred Alternative Minimum Program.

This technical memorandum discusses the regulatory setting and describes the affected environment and the impacts of the Proposed Action on biological resources within the identified study area. This memorandum also documents mitigation measures, including applicable measures identified in the I-70 Mountain Corridor PEIS, which would reduce any impacts during construction and operation. The I-70 PEIS identified comprehensive improvements for the corridor. The Proposed Action would immediately address mobility and operations in the eastbound direction between Empire Junction and east Idaho Springs; however, it would not address all of the transportation needs in this area. The Proposed Action would not preclude other improvements needed and approved by the I-70 PEIS ROD.

Section 2. How Does the Analysis Relate to the Tier 1 PEIS?

The I-70 Mountain Corridor Final PEIS (CDOT 2011) committed to conducting additional analysis and coordination regarding biological resources during Tier 2 projects. The analysis of biological resources included the following commitments during this Tier 2 process:

- Adhere to any new or revised laws or regulations pertaining to biological resources.
- Develop specific mitigation measures and best management practices (BMPs) for each project.
- Review potential areas for enhancement of wildlife crossings or fish passage for each project.
- Fulfill responsibilities set forth in the "A Landscape Level Inventory of Valued Ecosystem Components" (ALIVE) Memorandum of Understanding.
- Review and adhere to BMPs set forth in the Stream and Wetland Ecological Enhancement Program (SWEEP).

Section 3. What Process Was Followed to Analyze Biological Resources?

3.1 Methodology

Project team biologists conducted site visits to assess the study area on the following dates:

- September 17, 2013: habitat assessment
- September 18, 2013 :wetland and vegetation surveys
- October 2, 2013: wetland and vegetation surveys
- November 26, 2013: wildlife enhancement field reconnaissance
- December 19, 2013: field reconnaissance with CPW to discuss potential wildlife enhancements

The purpose of the site visits was to evaluate existing wildlife habitat, riparian vegetation, aquatic resources, and noxious weeds in the study area.

The study area was evaluated for federally listed, threatened, and endangered species, as specified by the U.S. Fish and Wildlife Service Information, Planning, and Conservation (IPaC) System (USFWS, 2013) and state-listed endangered, threatened, and sensitive species, as specified by Colorado Parks and Wildlife (CPW) (Section 6.2.2.). In addition, the study area was surveyed for the presence of any raptor nests and other migratory bird nests.

Culverts and bridges were surveyed for large terrestrial mammal tracks or signs. Animal-vehicle collision (AVC) data from CDOT maintenance and the Colorado State Patrol were analyzed to determine where AVCs are concentrated in the study area. These data were provided to the interagency ALIVE Committee. The ALIVE Committee met twice (September 24, 2013 and December 3, 2013) to discuss enhancing existing infrastructure to minimize occurrences of AVCs.

Noxious weeds in the study area were surveyed, dominant plant species recorded, and representative photographs taken. Noxious weed mapping data were obtained from Clear Creek County and CDOT.

Wetlands and Waters of the United States (WOUS) were delineated in accordance with the 1987 U.S. Army Corps of Engineers (USACE) "Wetland Delineation Manual" and the 2010 Corps "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE, 2010).” Results of the wetland delineation will be provided in a separate technical report. In addition, potential Senate Bill 40 (SB 40) resources, including riparian vegetation, were evaluated in the field and appropriate mapping conducted.

Lastly, CPW provided fish survey and stocking data for sampling sites in Clear Creek near Idaho Spring as well as benthic invertebrate survey data just downstream of Idaho Springs (CPW, 2011). Per CPW, no sampling surveys have been conducted in the study area (Winkle, 2013).

3.2 Study Area

The study area for biological resources extends along eastbound I-70 between MP 230 and MP 243 (see Figure 1). This study area represents the extent of proposed improvements, including signage and roadway improvements. The study area is found on the U.S. Geological Survey 7.5-minute quadrangles: Squaw Pass, Idaho Springs, Central City, Empire, and Georgetown, and has the following coordinates (datum is NAD 83):

- Latitude and longitude
  - Western terminus: Lat 39.7588 Long -105.6517 (39*45'31.87" N Long 105*39'.06.14" W)
  - Eastern terminus: Lat 39.7438 Long -105.4826 (Lat 39*44'37.83" N Long 105*28'57.40" W)

The study area includes I-70 and the adjacent right-of-way, which follows Clear Creek, a perennial tributary of the South Platte River. The elevation of the study area ranges from approximately 7,400 feet to 8,250 feet above mean sea level.

3.3 Regulations

Biological resources in the study area include wildlife, noxious weeds, vegetation, and aquatic resources. Federal and state regulations protect many of these biological resources and require evaluation of the effects of the Proposed Action on these resources. Table 1 lists the federal and state regulations that are applicable to this project.

Figure 1. Project Study Area

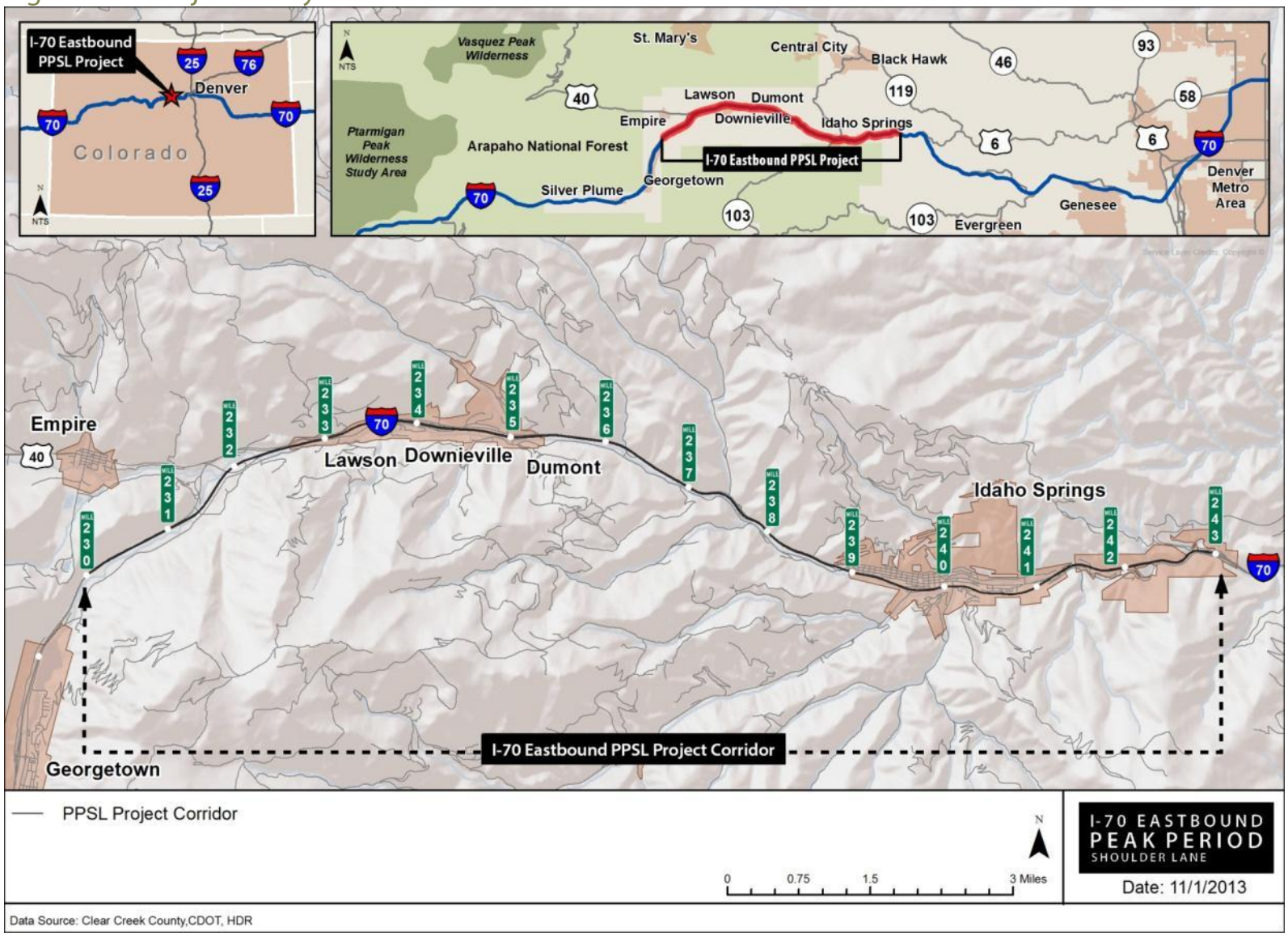


Table 1. Applicable Federal and State Regulations

Regulation	Agency	Additional Information
Endangered Species Act	USFWS	Section 7 of the Endangered Species Act outlines the responsibilities of federal agencies to participate in the conservation and recovery of listed species and requires agencies to ensure that any action that is federally authorized, funded, or carried out is not likely to jeopardize the continued existence of listed species or modify their critical habitat. Consultation is required if a proposed project may affect federally listed species.
Bald and Golden Eagle Protection Act (BGEPA)	USFWS	The BGEPA prohibits individuals and companies from knowingly, or with wanton disregard for the consequences of the Act, taking any bald or golden eagles or their body parts, nests, chicks, or eggs, which includes collection, molestation, disturbance, or killing.
Migratory Bird Treaty Act (MBTA)	USFWS	The MBTA (16 U.S.C. 703-712) protects migratory birds, and their nests, eggs, young, and parts from possession, sale, purchase, barter, transport, import, and export, and take.
The Colorado Nongame, Endangered, and Threatened Species Conservation Act.	CPW	Provides some protection within the state for listed species and establishes the State's intent to protect endangered, threatened, or rare species.
Colorado Senate Bill 40	CPW	Requires any agency of the state to obtain wildlife certification from the Colorado Division of Wildlife when the agency plans construction in any stream or on any stream bank.
Noxious Weeds	CDOA	The Colorado Department of Agriculture (CDOA) Noxious Weed Act of 2003 (CRS 35-5-101; CRS 35-5.5-101; Executive Order (EO) D-006-99), defines and prioritizes management objectives for state-designated noxious weeds.

3.4 Coordination and Consultation

CDOT has initiated coordination with federal and state agencies, local stakeholders, and working groups, and will continue that commitment throughout the project. Consultation and coordination efforts conducted to date related to biological resources for this project are listed in Table 2. Meeting minutes are included in Appendix A of this technical memorandum.

Table 2. Coordination and Consultation Summary

Agency or Committee	Meeting Date	Purpose of Meeting
SWEEP	September 20, 2013	Provide overview of project and discuss issues relating to water quality, wetlands, and aquatic resources.
ALIVE	September 24, 2013	Provide overview of project and discuss linkage interference zones located in project corridor.
USFWS	October 24, 2013	Teleconference with USFWS to discuss federally-listed species occurrence in study area.
ALIVE	December 3, 2013	Review current retaining wall height and length and review of reductions in median width. Discuss retaining wall and median width effect on wildlife movement areas and impacts to Canada lynx. Review recommendations from

Table 2. Coordination and Consultation Summary

Agency or Committee	Meeting Date	Purpose of Meeting
		the site visit on November 26, 2013, at which the project team examined potential location for wildlife enhancement.
SWEEP	December 5, 2013	Provide an update on the field meeting with CDPHE and recommendations for hazmat. Discuss locations of the proposed water quality ponds and other Clear Creek Sediment Control Action Plan recommendations that will be implemented.
CPW	December 19, 2013	Meeting with CPW to discuss potential wildlife mitigation options and to identify problem areas that CPW considers priority.

Section 4. Description of the Proposed Action

The purpose of the I-70 PPSL project is to provide short-term eastbound operational improvements to relieve traffic congestion during periods when traffic volumes are highest. This segment is the most congested stretch of the entire I-70 Mountain Corridor. During both the summer and winter peak season, traffic volumes are highest on weekends when recreational travelers comprise more than 90 percent of traffic. In 2010 drivers experienced speeds of less than 20 miles per hour for 35 percent of the time on Sundays, which have the highest volume. Some motorists divert to the frontage road along I-70, which affects its ability to function as a local access county road.

The Proposed Action would add a peak period shoulder lane between the US 40/I-70 interchange and east Idaho Springs. This managed lane would be used during peak periods, defined as Saturdays, Sundays, and holidays, improving travel times and operations. The project extends from milepost 230 to milepost 243, with improvements proposed as follows:

- Milepost 230 to milepost 232: signage improvements only. Signage would notify motorists of the status of the managed lane, entrance and exit points, and cost.
- Milepost 232 to milepost 242: roadway improvements, including: up to 3.5 feet of widening in select areas to accommodate the managed lane, up to 14 feet of widening at the SH 103 on ramp and 4 feet to 8 feet of widening at all other on-ramps in the corridor, replacement of the existing SH 103 bridge, bridge replacement and interchange improvements at Exit 241, improvements to Water Wheel Park, signage, rock fall mitigation in two locations, and construction of 11 retaining walls.
- Milepost 242 to milepost 243: signage improvements only.

The managed lane, which would be tolled, would operate up to, but not exceed, 20 percent of the annual days or 7.5 percent of the time, and connect to the three-lane section provided by the Twin Tunnels project, east of Idaho Springs, thereby capitalizing on that investment.

The improvements will be consistent with the *I-70 Mountain Corridor Programmatic Environmental Impact Statement* (PEIS) *Record of Decision* (ROD), I-70 Mountain Corridor Context Sensitive Solutions process, and other commitments of the PEIS. The Proposed Action fits within the definition of “expanded use of existing transportation infrastructure in and adjacent

to the corridor" as an element of the Preferred Alternative Minimum Program.

See Figure 2 for an overview of the proposed improvements.

Section 5. Results

5.1 Habitat Description

The study area is located adjacent to Clear Creek, a perennial tributary of the South Platte River. The elevation of the study area ranges from approximately 7,400 feet to 8,250 feet above mean sea level. The study area is primarily located within Montane and Foothills Zone and the vegetation communities are predominately evergreen forests and scrub/shrub communities. Vegetation in the study area includes, but is not limited to, ponderosa pine (*Pinus ponderosa*), mountain mahogany (*Cercocarpus montanus*), common juniper (*Juniperus communis*), mountain muhly (*Muhlenbergia montana*), blue grama (*Bouteloua gracilis*) Rocky Mountain juniper (*Juniperus scopulorum*), and Douglas-fir (*Pseudotsuga menziesii*) (CDOT, 2013).

Habitat located north and south of the study area consists of open rocky/steep terrain intermixed with low shrubs and trees. Habitat adjacent to Clear Creek within the study area is characterized by steep, riprap banks and narrow bands of riparian habitat. Riparian habitat occurs along Clear Creek and in drainage areas, which enter Clear Creek. Narrowleaf cottonwood (*Populus angustifolia*) is the most dominant riparian tree species, with scattered ponderosa pine, Douglas fir, thinleaf alder (*Alnus incana*), river birch (*Betula fontinalis*), numerous willow species (*Salix* spp.) and Engelmann spruce (*Picea engelmannii*). Riparian areas are characterized by sparse herbaceous vegetation due to the rocky nature of the soil and the steep slopes (see Figure 3 and Figure 4) (CDOT, 2013).

5.2 Noxious Weeds

As defined by the Colorado Department of Agriculture (CDOA), noxious weeds are plants that reduce agricultural productivity, lower real estate values, endanger human health and well-being, and damage scenic values (CDOA, 2013). The Colorado Noxious Weed Act §§ 35-5.5-101 through 119, C.R.S. as amended, states that an organized and coordinated effort must be made to stop the spread of noxious weeds.

The State of Colorado maintains a noxious weed list that designates and classifies noxious weeds into categories for immediate eradication, containment, and suppression: List A, List B, and List C species. List A species were designated by the Commissioner for eradication. List B species are species the Commissioner, in consultation with the state noxious weed advisory committee, local governments, and other interested parties, developed and implemented into state noxious weed management plans designed to stop the continued spread of these species. List C species are species for which the Commissioner, in consultation with the state noxious weed advisory committee, local governments, and other interested parties, will develop and implement into state noxious weed management plans designed to support the efforts of local governing bodies to facilitate more effective integrated weed management on private and public lands.

Figure 2. Proposed Action Improvements

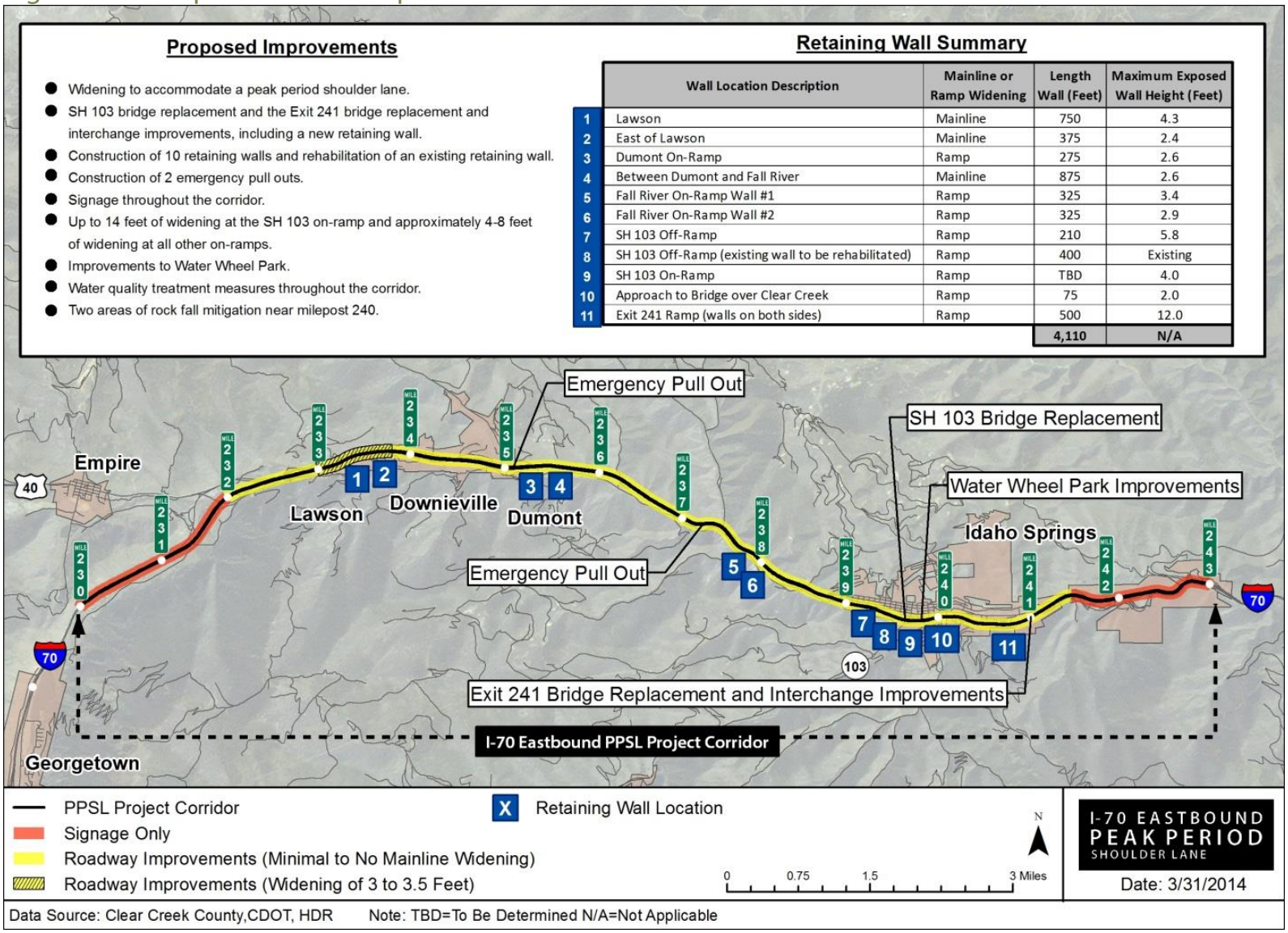


Figure 3. Study Area Vegetation Communities (MP 230–MP 235)

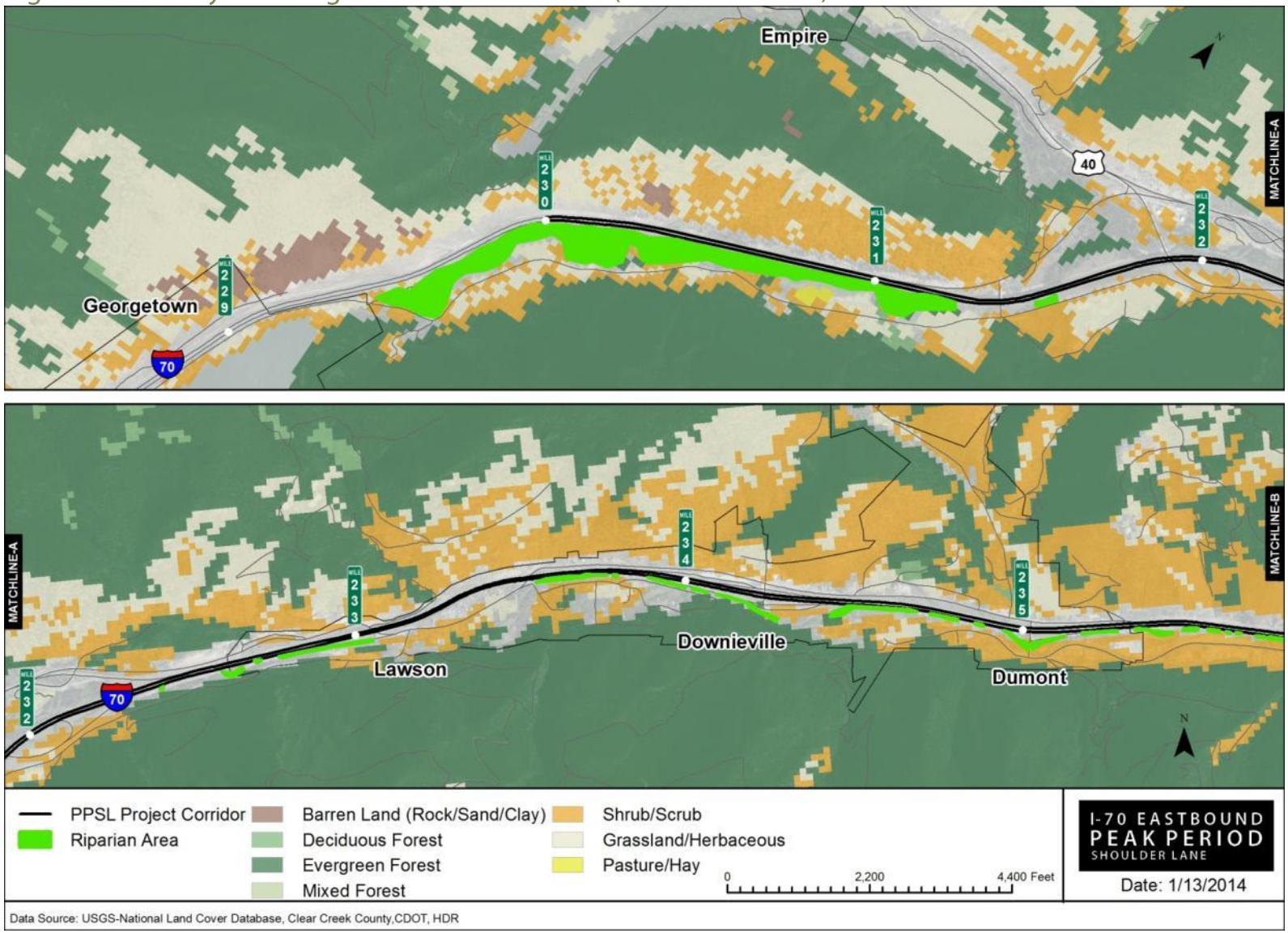
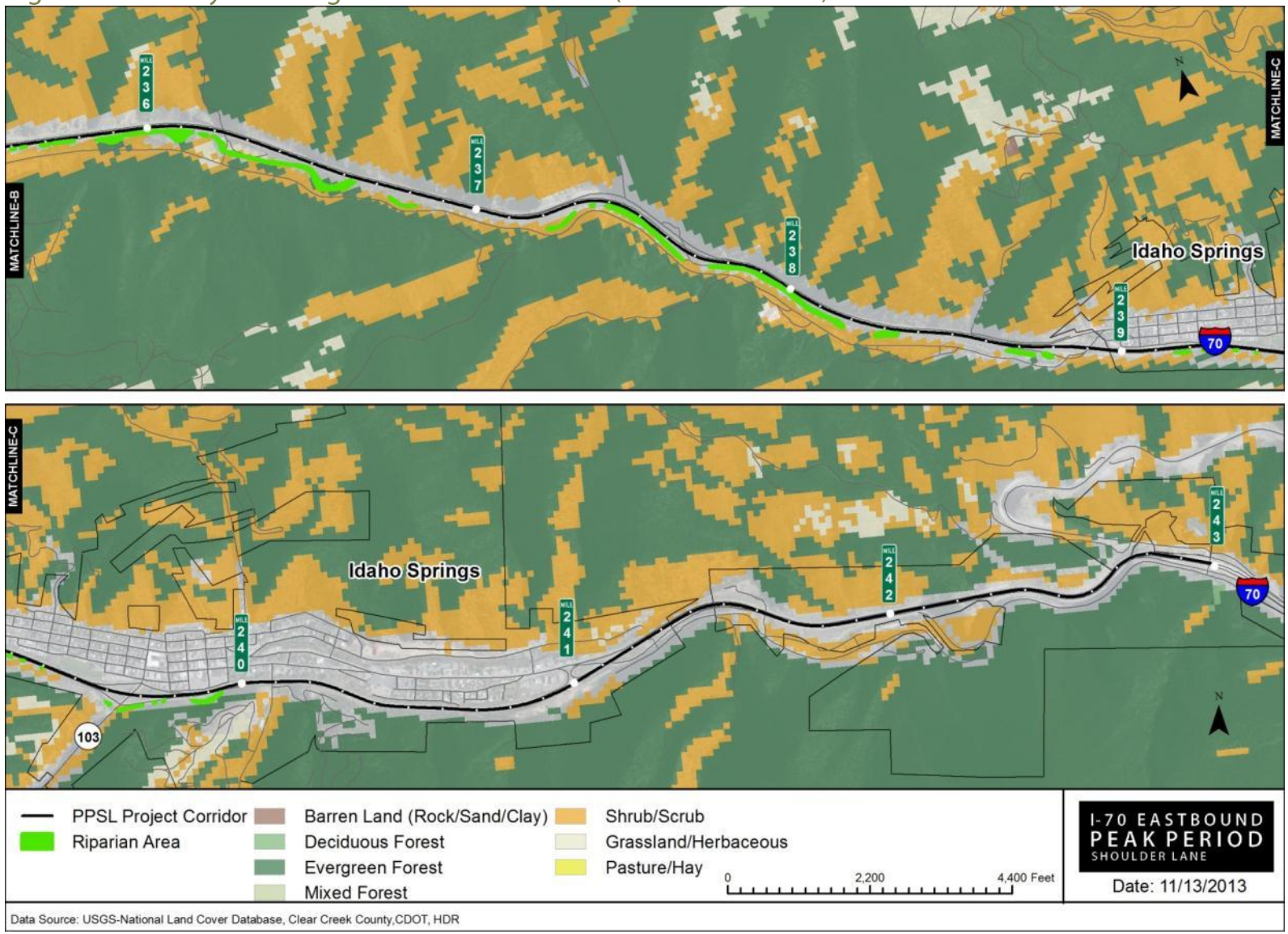


Figure 4. Study Area Vegetation Communities (MP 236–MP 243)



The Clear Country Noxious Weed Management Plan and the CDOA Noxious Weed List were reviewed for List A, B, and C Species (CDOA, 2013). CDOT noxious weed online mapping documents List A and B noxious weed species mapped in the study area (see Figure 5 and Figure 6). Noxious weeds were noted throughout the study area during wetland delineation surveys conducted in September and October 2013. A total of 12 weed species designated as noxious weeds by the State of Colorado have been found in the study area, including ten List B species and two List C species. No List A or watchlist species were found (see Table 3). Chinese clematis was observed growing along sections of the riparian corridor and was very dense in some locations. A Noxious Weed Management Plan will be developed during final design that complies with CDOT guidance.

Table 3. Colorado Noxious Weed Species Observed in Study Area

Common Name	Scientific Name	State Weed List	Clear Creek County List
Russian knapweed	*Acroptilon repens*	List B	List B
Diffuse knapweed	*Centaurea diffusa*	List B	List B
Chinese clematis	*Clematis orientalis*	List B	List B
Common mullein	*Verbascum thapsus*	List C	List C
Yellow toadflax	*Linaria vulgaris*	List B	List B
Russian olive	*Elaeagnus angustifolia*	List B	List B
Downy brome (cheatgrass)	*Bromus tectorum*	List C	List C
Canada thistle	*Cirsium arvense*	List B	List B
Perennial pepperweed	*Lepidium latafolium*	List B	List B
Moth mullein	*Verbascum blattaria*	List B	List B
Spotted knapweed	*Centaurea maculosa*	List B	List B
Spurred anoda	*Anoda cristata*	List B	List B

5.3 Federal and State-listed species

Federally-listed threatened and endangered species are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). The ESA defines an endangered species as a species that is in danger of becoming extinct throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future. Proposed species are protected candidate species that are found to warrant listing under the ESA as either endangered or threatened and have been proposed as such in the Federal Register. Candidate species are those species that are petitioned for listing as endangered or threatened under the ESA but that have not been proposed as such in the Federal Register. Candidate species are currently not federally protected.

Figure 5. Noxious Weed Locations (MP 230–MP 235)

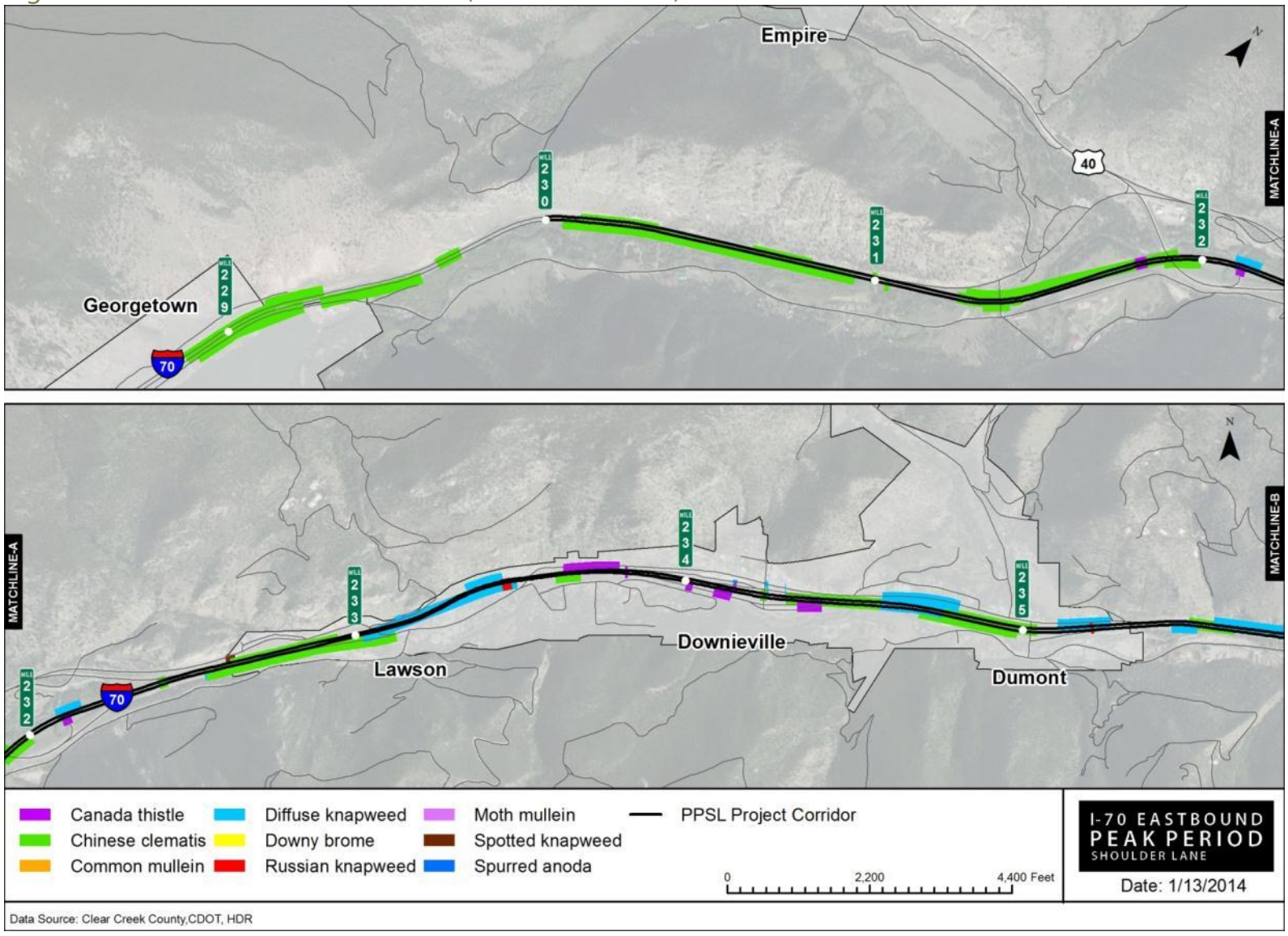


Figure 6. Noxious Weed Locations (MP 236–MP 243)

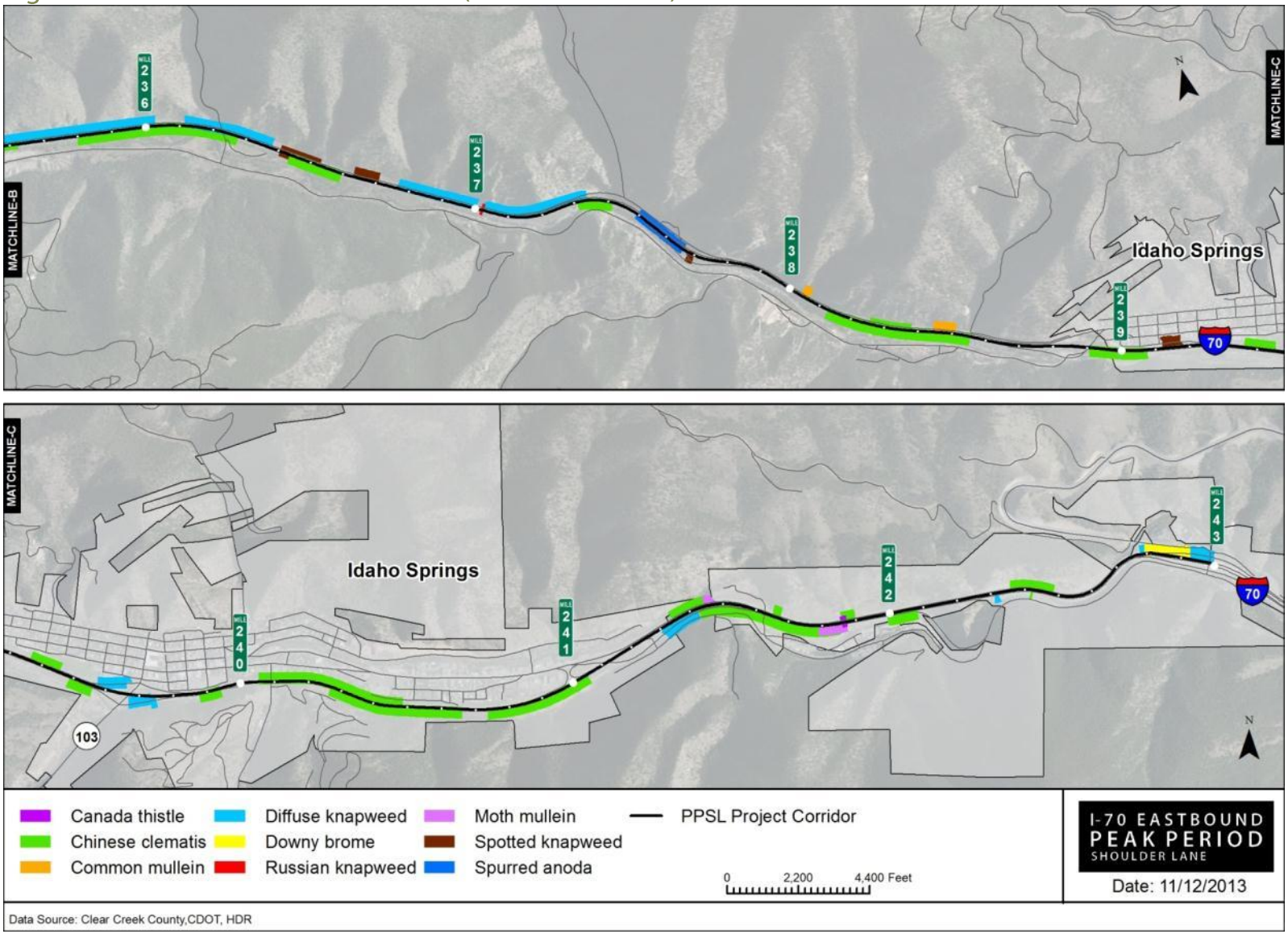


Table 4 lists the federally and state-listed species potentially found in Clear Creek County and within the study area based on the USFWS online IPaC System and CPW threatened, endangered, and state special concern species.

Table 4. Federally and State-Listed Species Potentially Occurring in the PPSL Study Area

Common Name	Scientific Name	Status[1]	Potential to Occur in Study Area
Mammals			
Canada lynx	*Lynx canadensis*	FT, SE	Yes
North American wolverine	*Gulo gulo luscus*	FC, SE	No
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	FT, ST	No
Birds			
Mexican Spotted Owl	*Strix occidentalis lucida*	FT, ST	No
Whooping Crane	*Grus Americana*	FE, SE	Yes*
Least Tern	*Sterna antillarum*	FE, SE	Yes*
Piping Plover	*Charadrius melodus*	FT, ST	Yes*
Peregrine Falcon	*Falco peregrines anatum*	SC	Yes
Bald Eagle	*Haliaeetus leucocephalus*	SC	Yes
Plants			
Western prairie fringed orchid	*Platanthera praeclara*	FT	Yes*
Fish			
Pallid sturgeon	*Scaphirhynchus albus*	FE	Yes*
Greenback cutthroat trout	*Oncorhynchus clarki stomias*	FT, ST	No
Amphibians			
Boreal toad	*Bufo boreas boreas*	SE	Yes
Reptiles			
Common Garter Snake	*Thamnophis sirtalis*	SC	Yes

Source: USFWS 2013; CPW 2013a
*Species potentially impacted by Platte River system water depletions
[1]Status Codes: FC= Federal Candidate; FE = Federally Endangered; FT = Federally Threatened; SE = State Endangered; ST = State Threatened, SC = State Special Concern

Communication with the USFWS and analysis of habitat requirements of the listed species indicates that with the exception of Canada lynx, suitable habitat does not exist for the federally listed species potentially found in Clear Creek County within the study area (excluding species potentially impacted by Platte River System water depletions). Water depletions in tributaries, such as Clear Creek, could potentially affect federally listed species that inhabit the South Platte River. Water depletions can occur during certain construction activities that require water use, including compaction, cement mixing, detention ponds, dust control, and dewatering for access and construction in wetlands and riparian areas.

State-listed species are species CPW considers threatened or endangered within the state of Colorado. In the study area these include the following:

- The American Peregrine Falcon has the potential to occur in the study area. Peregrine Falcons breed on cliffs and rock outcrops from 4,500 feet to 10,000 feet in elevation. There is suitable nesting habitat identified near Empire Junction/US 40 in the study area; however, no known nests have been identified (CPW, 2013b).
- The Bald Eagle is present in the project area and is discussed further in Section 5.4.

- The boreal toad has potential habitat designated in the western portion of the study area (CPW, 2013a). The boreal toad is an alpine species that is distributed throughout the Rockies from the northern state border to Mineral and Hinsdale counties in the south at elevations between 7,500 and 12,000 feet. Boreal toads are restricted to areas with suitable breeding habitat in spruce-fir forests and alpine meadows. Breeding habitat includes lakes, marshes, ponds, and bogs with sunny exposures and quiet, shallow water. Boreal toads feed on a wide range of invertebrates and insects, including flies, mosquitoes, grasshoppers, beetles and moths (CPW, 2013b).
- Common garter snakes are found in a wide variety of habitats, including marshes and wet meadows, margins of ponds, woodland and woodland edge, floodplains and cultivated fields (CPW, 2013b). A common garter snake was documented adjacent to the project area on September 18, 2013, near Water Wheel Park.

No further evaluation is deemed necessary for those species not known or suspected to occur within the study area.

Canada Lynx

The Canada lynx is a medium-sized cat with long legs, large, well-furred paws, short black-tipped tail and prominent ear tufts and a flared facial ruff. The winter pelage of lynx is dense and gray to silverish in appearance, with the summer pelage more reddish to gray-brown. The lynx's long legs and large feet make it highly adapted for hunting in deep snow. The Canada lynx prefers moist boreal forests that have cold, snowy winters where they hunt snowshoe hares (*Lepus americanus*), their principal prey. Other prey species include small to medium-sized mammals, birds, fish, and occasionally larger mammals and carrion (USFWS, 2013 a). Riparian and wetland shrub communities found in valleys, drainages, wet meadows, and moist timberline locations may support important prey resources (Ruediger et al., 2000).

Primary lynx habitat in the southern Rocky Mountains is located within the subalpine and upper montane forest zones, typically between 8,000 feet and 12,000 feet in elevation. Depending on latitude and moisture gradients, however, the lower range of suitable lynx habitat may begin at lower or higher elevations. At the upper elevations of the subalpine, forests are typically dominated by subalpine fir (*Abies* spp.) and Engelmann spruce. As the subalpine transitions to the upper montane, spruce-fir forests begin to give way to a predominance of lodgepole pine (*Pinus contorta),* aspen (*Populus* spp.), or mixed stands of pine, aspen, and spruce. Englemann spruce may retain dominance on cooler, more mesic mid elevation sites, intermixed with aspen, lodgepole pine, and Douglas fir (Ruediger et al., 2000).

The lower montane zone is dominated by ponderosa pine and Douglas fir, with pine typically dominating on lower, drier, more exposed sites, and Douglas fir occurring on moister and more sheltered sites. Although this forest zone is below primary lynx habitat, montane forests likely are important as connective habitat where they may facilitate lynx dispersal and movements between blocks of primary lynx habitat, and may provide some foraging opportunities during those movements (Ruediger et al., 2000).

Lynx habitat in the Southern Rockies is naturally fragmented due to elevation, aspect, and local moisture regimes. The high alpine tundra environments and lower, mostly open valleys typically separate subalpine and upper montane forests. Drier south- and west-facing slopes may also break up the continuity of cooler, mesic high-elevation forests that are believed to constitute primary lynx habitat. In these areas, lynx incorporate the matrix habitat (non-boreal forest habitat

elements) into their home ranges and use it for traveling between patches of boreal forest that support high hare densities where most foraging occurs (USFWS, 2013a).

Individual lynx maintain large home ranges generally between 12 square miles to 83 square miles. The size of lynx home ranges varies depending on abundance of prey, the animal's gender and age, season, and the density of lynx populations. When densities of snowshoe hares decline, for example, lynx enlarge their home ranges to obtain sufficient amounts of food to survive and reproduce. Lynx also make long distance exploratory movements outside their home ranges (USFWS, 2013a).

Lynx use large woody debris, such as downed logs and windfalls, to provide denning sites with security and thermal cover for kittens. For lynx den sites, the age of the forest stand may not be as important as the amount of downed, woody debris available. Breeding occurs between February and April with births occurring in late May to early June. During periods of hare abundance in the northern taiga, litter size of adult females averages four to five kittens. Litter sizes are typically smaller in lynx populations in the contiguous United States (USFWS, 2013a).

Timber harvest, recreation, and their related activities are the predominant land uses affecting lynx habitat in the contiguous United States. Landscape connectivity between lynx populations and habitats in Canada and the contiguous United States must be maintained. Lynx movements may be negatively affected by high traffic volume on roads that bisect suitable lynx habitat, such as in the Southern Rockies, and in some areas, mortalities due to road kill are high (USFWS, 2013a).

Colorado represents the southern-most historical distribution of Canada lynx, where the species occupies the higher elevation montane forests. Lynx were essentially extirpated from the state by the late 1970s, due to unregulated trapping, predator control and habitat incursion (Meaney, 2002). CPW initiated a reintroduction program in 1997. From 1999 to 2006, 218 wild-caught lynx from Alaska and Canada were released in southwestern Colorado (Shenk, 2009).

CPW has identified suitable lynx habitat north and south of the study area (see Figure 7 and Figure 8) (CPW, 2013b). Since suitable habitat is above 8,000 feet in elevation, likely occurrences of lynx would be in the study area west of Downieville. Movement of lynx across I-70 west of Empire Junction has been documented by CPW from reintroduced and Colorado-born lynx using VHF telemetry, the Argos satellite system, and snow tracking surveys from 1999 to 2010 (Ivan, 2012). Based on a total of 80 documented crossings, 31 (39 percent) of these segments crossed I-70 within a 10-kilometer stretch spanning the east entrance of Eisenhower Johnson Memorial Tunnel to Bakerville. Thirteen (16 percent) additional segments crossed from the east entrance of the tunnel through the Loveland Pass Linkage Zone, and 12 more (15 percent) passed through the Vail Pass Linkage Zone. No crossings were documented east of Empire Junction (Ivan, 2012).

An analysis of AVC data collected by CDOT does not identify any lynx collisions in the study area. The primary issue affecting lynx in the study area is the interference of I-70 with lynx movement commonly referred to as the barrier effect. There is one designated linkage interference zone (LIZ) that identified lynx as the target species in the study area: LIZ N (Empire Junction from MP 231.6-232.9) (Kintsch et al., 2011).

Figure 7. Lynx Habitat (MP 230–MP 235)

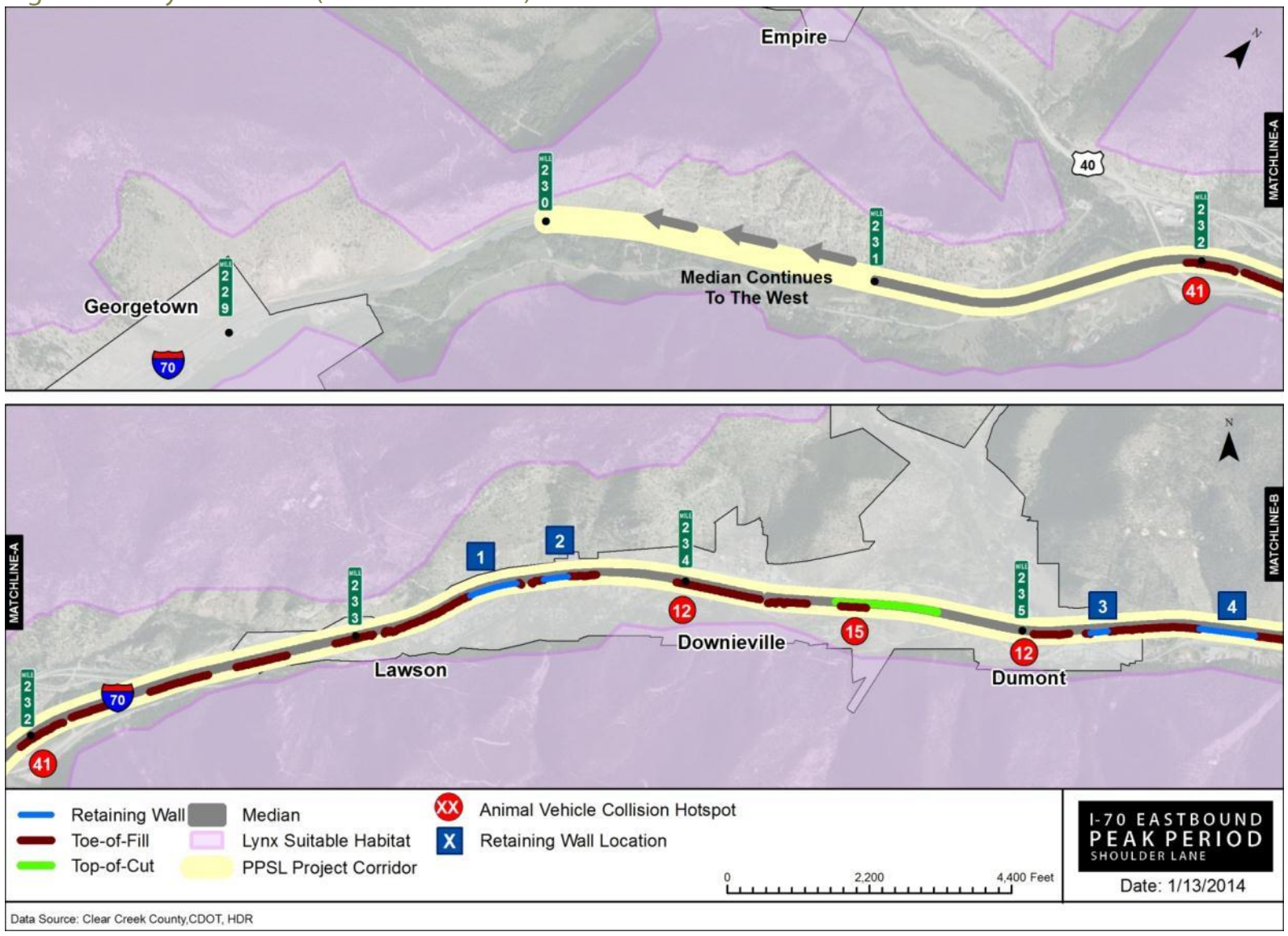
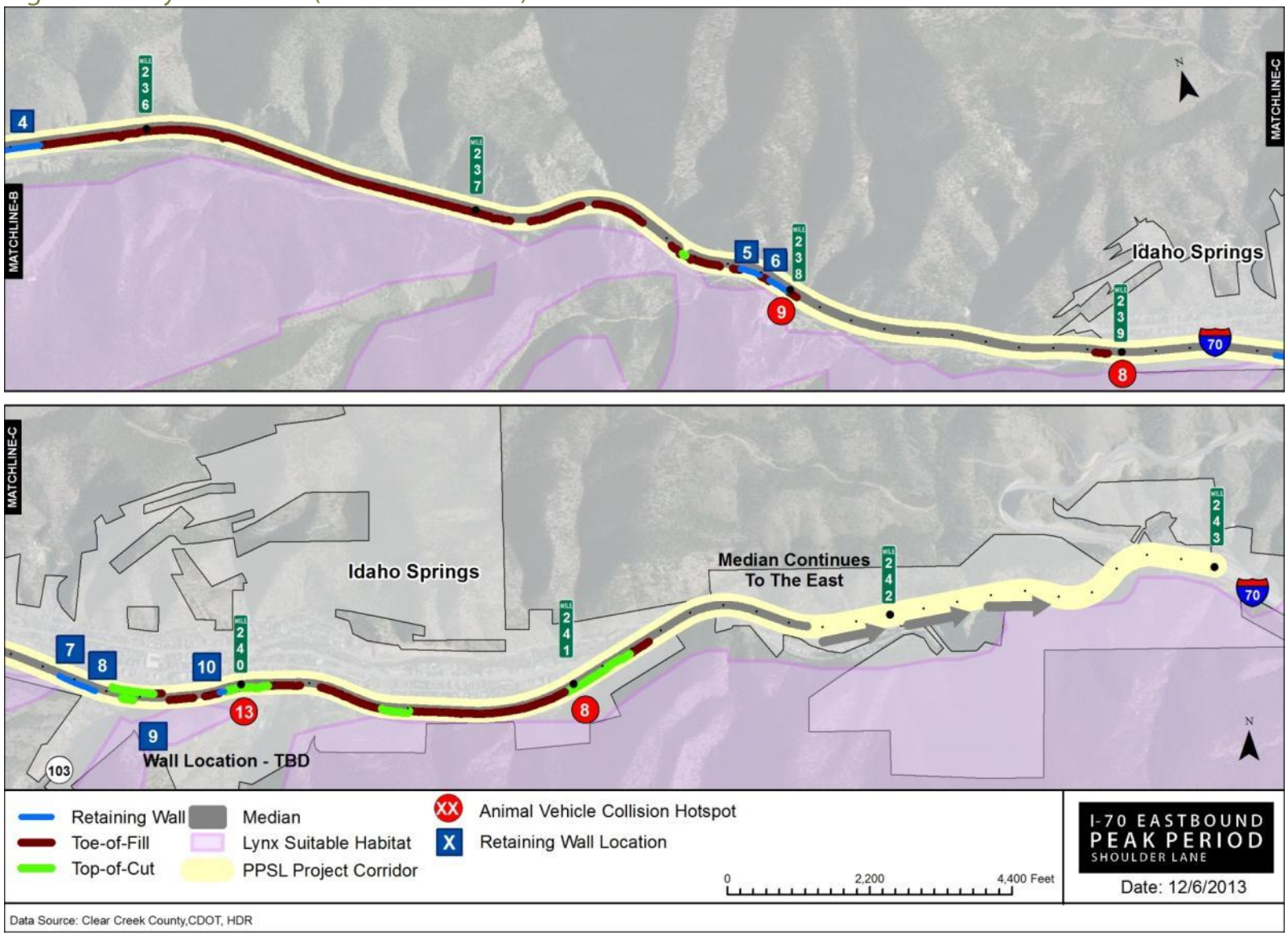


Figure 8. Lynx Habitat (MP 236–MP 243)



5.4 Terrestrial Mammals

Large terrestrial mammal species that regularly occur within suitable habitat in the study area include mule deer (*Odocoileus hemionus*), bighorn sheep (*Ovis canadensis*), and elk (*Cervus canadensis*). The entire study area is designated by CPW as mule deer summer and winter range, and areas north of I-70 are designated as winter concentration areas (see Figure 9). Elk summer range is designated north and south of I-70 from west of Idaho Springs, and winter range is present south of I-70 (see Figure 10). Bighorn sheep are frequently observed on the north side of I-70 throughout the study area. Areas north of I-70 are designated as summer and winter range with designated areas of winter concentration adjacent to I-70 (see Figure 11) (CPW, 2013b). East-west connectivity across Highway 40 is more important for sheep than connectivity across I-70 (Kintsch et al., 2011). Sheep typically stay on the north of I-70 to avoid the densely forested habitat, which is considered unsuitable for sheep (CDOT, 2013).

The entire study area is mapped as black bear (*Ursus americanus*) habitat by CPW. Moose (*Alces alces*) are rare in the study area, but may occasionally be seen west of Empire Junction (CPW, 2013b). Input from CPW indicates that moose occurrences in the study area have been increasing in the last five years and there have been several moose-vehicle collisions near the US 40 and I-70 intersection recently (Petersburg, 2013). The study area provides foraging habitat for a variety of predators, including coyote (*Canis latrans*), red fox (*Vulpes vulpes*), bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*). In addition, mountain lions (*Puma concolor*) are found throughout the region in areas that support populations of deer, bighorn sheep, and elk. Common small mammal species include ground squirrels, mice, chipmunks, and rabbits. Beaver (*Castor canadensis*) are frequently observed adjacent to Clear Creek.

An analysis of AVC data from MP 232 to MP 241, which is where all proposed roadway improvements would occur, documented 262 AVCs from 2001 to 2013. The study team analyzed these data to determine the location of “hotspots”; areas where AVCs were highest in the study area (see Figure 12). These records show that deer, elk, fox, coyote, black bear, bighorn sheep, and raccoon are the most common species involved in AVCs in the study area.

Landscape Level Inventory of Valued Ecosystem Components (ALIVE)

During the NEPA process completed for the I-70 Mountain Corridor Final PEIS, lead agencies examined habitat connectivity and AVCs through the interagency ALIVE committee. The ALIVE Committee identified 13 areas where the I-70 Mountain Corridor interferes with wildlife migration, including elk, mule deer, bighorn sheep, and Canada lynx. These locations are referred to as linkage interference zones (LIZs). By focusing on areas of known migration and wildlife use, and creating wildlife crossings, AVCs can be reduced and habitat connectivity can be increased. A Memorandum of Understanding (MOU), signed in April 2008, details the responsibilities of each agency in addressing AVCs.

Since the release of the Final PEIS, additional data have been compiled, and a systematic process was developed, to refine the 13 priority connectivity zones originally delineated in 2004. As a result, new analysis completed for the I-70 Mountain Corridor has identified 17 LIZs, covering approximately 51 miles. This updated analysis identified the following two LIZs within the study area:

Figure 9. Mule Deer Habitat

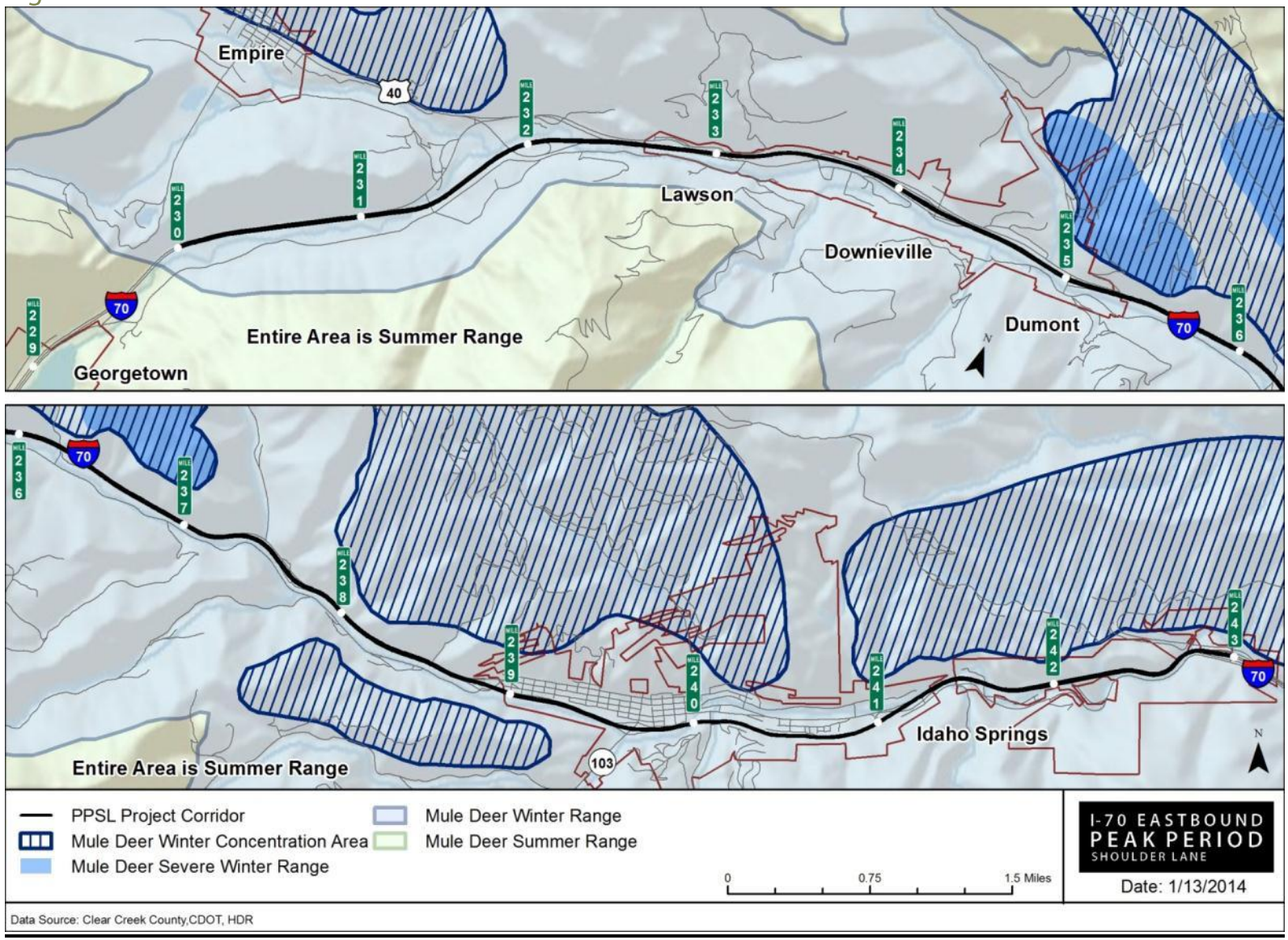


Figure 10. Elk Habitat

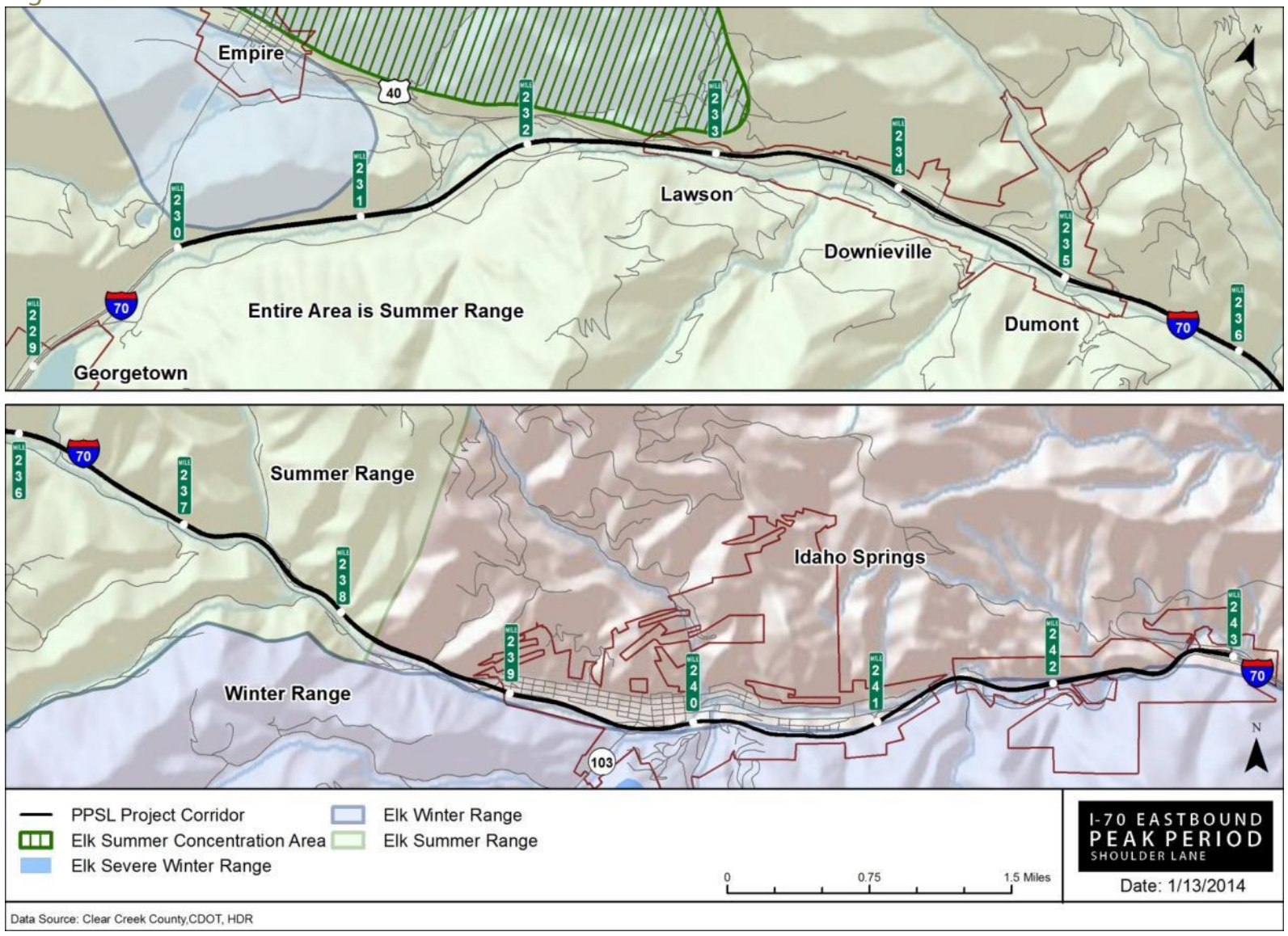


Figure 11. Bighorn Sheep Habitat

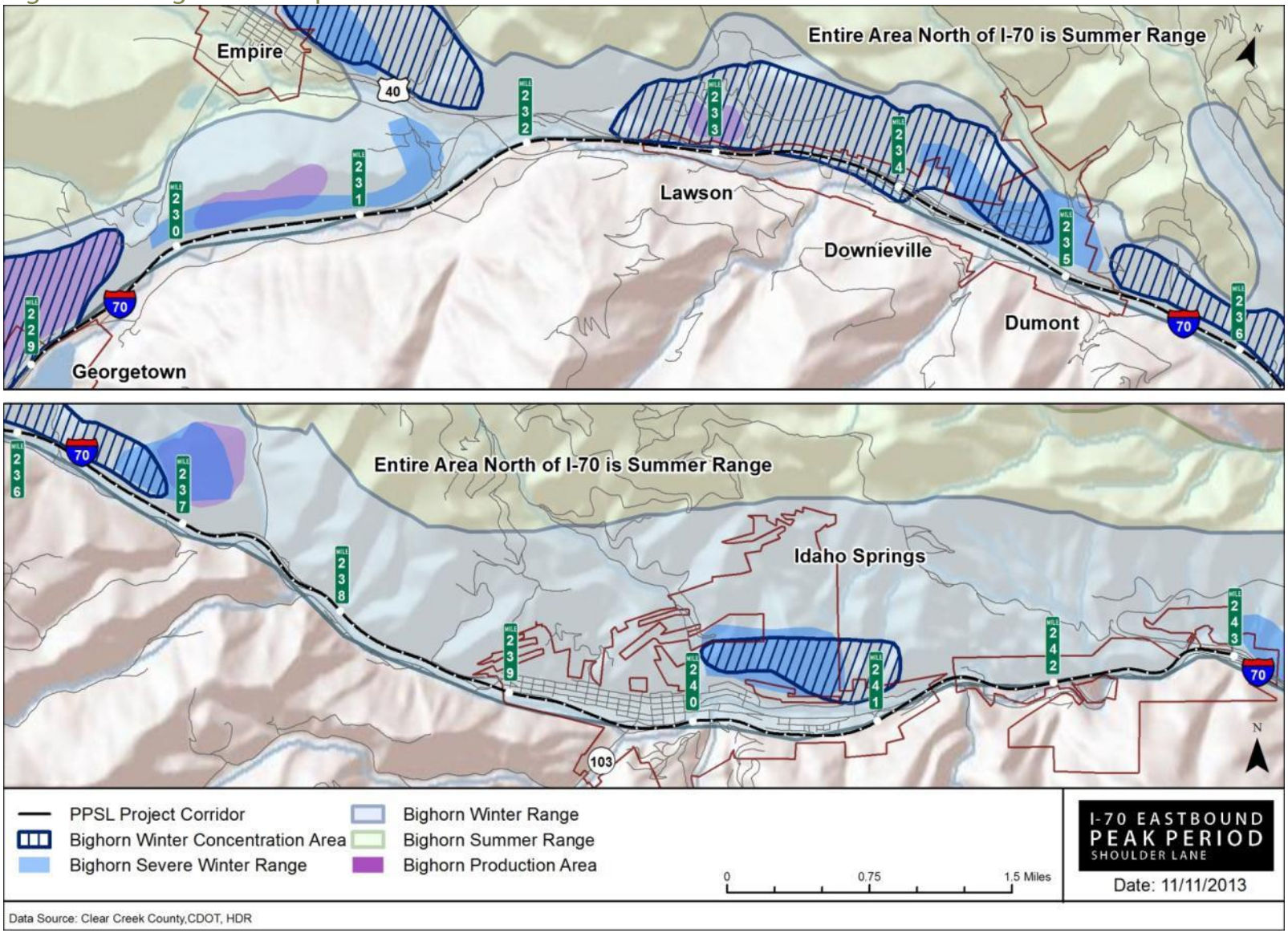
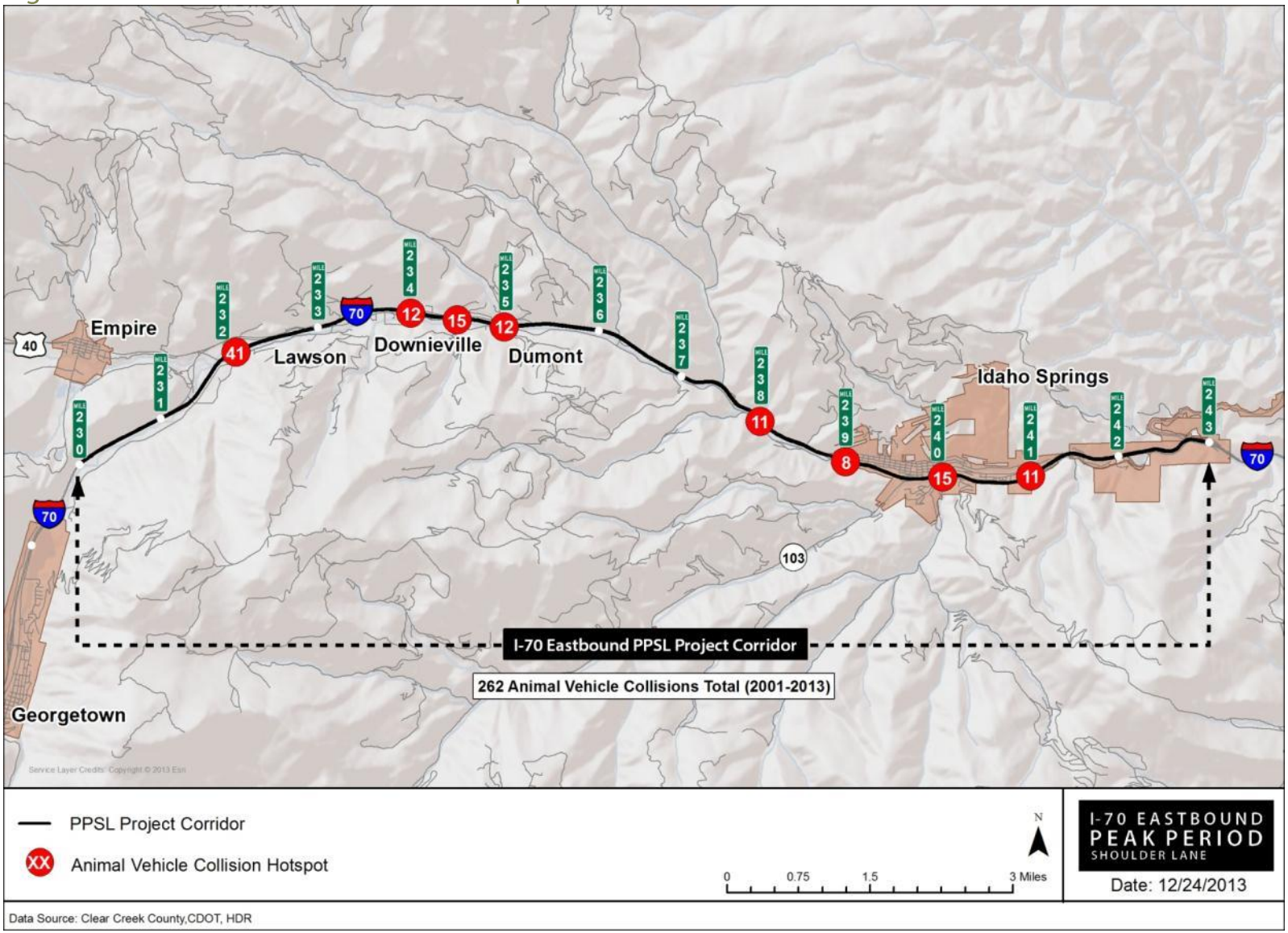


Figure 12. Animal-Vehicle Collision Hotspots



1. LIZ N: Empire Junction is located between MP 231.6 and MP 232.9 and is 1.4 miles long. The target species are Canada lynx, bighorn sheep, elk, mule deer, black bear, and northern leopard frog.
2. LIZ O: Clear Creek Junction is located between MP 243.0 and MP 244.9 and is 2 miles long. The target species at this location are elk, mule deer, bighorn sheep, mountain lion, Canada lynx, and Preble's jumping mouse. There are no roadway improvements planned at this location, and wildlife enhancements were included in this area as part of the Twin Tunnels project.

Project team members and CDOT conducted a site visit on November 26, 2013, to identify potential wildlife enhancement opportunities at known AVC hotspots within the study area. A second site visit was conducted on December 19, 2013, with CDOT and CPW to discuss potential wildlife enhancement opportunities and gather agency input.

Options discussed including new fencing, fencing removal, and modification of existing concrete medians to lower their height and create gaps at their base.

5.5 Raptors and Migratory Birds

The mixed montane forest, riparian habitat, and steep rocky terrain found within the study area provides foraging, roosting, and nesting habitat for a variety of migratory birds, such as raptors and passerines. The study area also provides nesting habitat for a variety of waterbirds, including geese, ducks, shorebirds, and gulls. Common breeding birds that have been documented during annual Breeding Bird Atlas surveys near the Clear Creek Watershed include Broad-tailed Hummingbird (*Selasphorus platycercus*), Northern Flicker (*Colaptes auratus*), Tree Swallow (*Tachycineta bicolor*), Violet-green Swallow (*Tachycineta thalassina*), Mountain Chickadee (*Poecile gambeli*), Red-breasted Nuthatch (*Sitta canadensis*), House Wren (*Troglodytes aedon*), Ruby-crowed Kinglet (*Regulus calendula*), American Robin (*Turdus migratorius*), Yellow-rumped Warbler (*Setophaga coronate*), Dark-eyed Junco (*Junco hyemalis*), and Pine Siskin (*Carduelis pinus)* (Evergreen Audubon 2013). CPW data indicate that a goose production area is located near US 40/Empire (MP 232) (CPW, 2013b). Annual Christmas Bird Count Data from Evergreen to Idaho Springs from 1969 to 2011 document an average of 47 bird species in this area. The most common wintering birds found in the study area are Mallard (*Anas platyrhynchos*), Steller's Jay (*Cyanocitta stelleri*), Black-billed Magpie (*Pica hudsonia*), American Crow (Corvus *brachyrhynchos*), Pygmy Nuthatch (*Sitta pygmaea*), Dark-eyed Junco, and Pine Siskin (National Audubon Society, 2002).

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) protects migratory birds and their nests, eggs, young, and parts from possession, sale, purchase, barter, transport, import, and export, and take. For purposes of the MBTA, "take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect." (50 C.F.R. § 10.12). In Colorado, most birds, except for the European Starling (*Sturnus vulgaris*), House Sparrow (*Passer domesticus*), Rock Dove (*Columbia livia*), Eurasian Collared-Dove (*Streptopelia decaocto),* and common Grouse/Pheasant species (*Order Galliformes*), are protected under the MBTA. The Migratory Bird Permit memorandum issued in April 2003 stipulates that there is no prohibition against destruction of inactive nests as long as the breeding season is avoided (approximately April 1 to August 31). Additionally, any disturbance to these nesting areas must follow the stipulations outlined in the MBTA.

Bald Eagle (*Haliaeetus leucocephalus*) and Golden Eagles (*Aquila chrysaetos*) are protected under the BGEPA (16 USC 668–668c) and the MBTA. The BGEPA protects Bald Eagles by

prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds. The definition of "take" includes the following: pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. USFWS generally recommends no human encroachment from November 15 through March 15 within a one-quarter 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 a one-half 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 (CPW, 2008).

Bald Eagles can be found year round in the study area; however, no nesting pairs have been documented in the study area (CPW, 2013b). Habitat adjacent to Clear Creek within the study area is mapped as winter range and winter forage for Bald Eagles; however, there are no documented winter night roosts (see Figure 13). While Bald Eagles are known to winter along suitable habitat adjacent to Clear Creek, the lack of contiguous riparian habitat or large cottonwood trees reduces the quality of habitat within the study area.

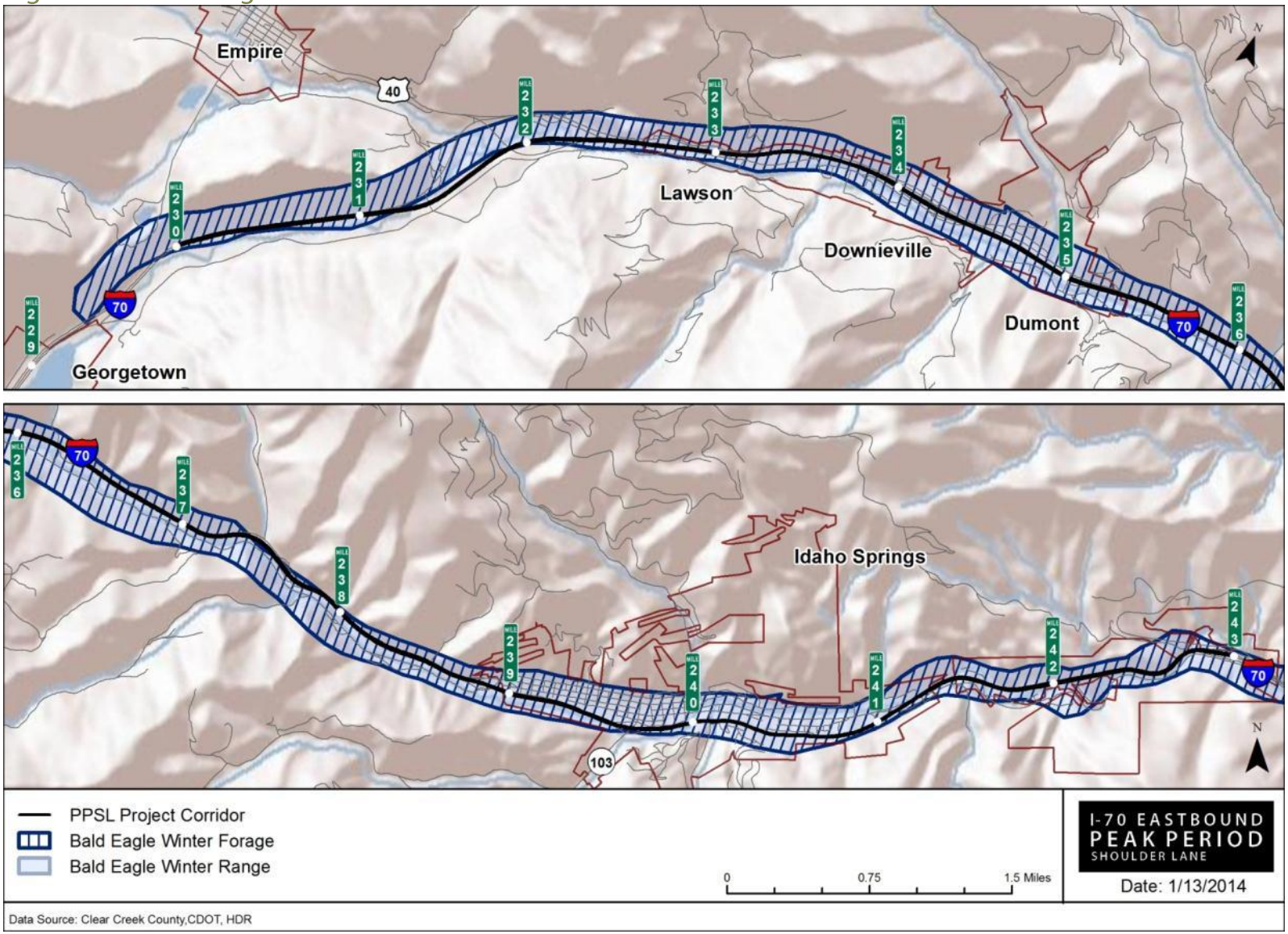
A nest survey for tree and cliff dwelling raptor nests was completed during biological resources field work conducted in fall 2013; however, no nests were identified at that time. In addition, bridge structures were surveyed for nesting swallows. No swallow nests were observed; nor were other migratory bird nests, however, the potential exists for these nests to be present during construction activities that would impact project bridges or remove trees. An additional nest survey will be conducted during the breeding season, between approximately late March through the end of August 2014, for an accurate determination of nesting avian presence.

5.6 Riparian Vegetation

Riparian areas, which are found along the banks of Clear Creek in the study area, serve as buffer zones to the creek and are home to unique wildlife species, including protected species (see Figure 3 and Figure 4). The dominant tree species in the riparian corridor in the study area is narrowleaf cottonwood. Other common riparian species in the study area include thinleaf alder, river birch, numerous willow species, Engelmann spruce, snowberry (*Symphoricarpos albus*), and red twig dogwood (*Cornus sericea*). Because of the steep incised banks of Clear Creek, riparian habitat is not contiguous within the project area, and is only found where fluvial processes (e.g., flooding and sediment deposition) still persist along the creek corridor.

SB 40 (33-5-101-107, C.R.S. 1973 as amended) is a formal agreement between CPW and CDOT designed to protect and preserve all fish and wildlife resources associated with streams in Colorado. An SB 40 Certification is obtained from CPW when construction occurs in any stream, its banks, or tributaries that meet SB 40 Certification application criteria and the impacts occur within a state or federal right-of-way. A stream or drainage must meet both the application criteria and qualify for SB 40 jurisdiction to require an SB 40 certification and certification application.

Figure 13. Bald Eagle Habitat



5.7 Aquatic Species

Clear Creek is considered a "high value" fishery that provides high quantity habitat for a variety of fish species. Clear Creek supports wild, naturally reproducing brown trout (*Salmo trutta*) populations and stocked populations of rainbow trout (*Oncorhynchus mykiss*). Brown trout spawn from October through November and make up about 95 percent of the fish present in Clear Creek between Georgetown and Golden. Rainbow trout are stocked annually, but only make up approximately five percent of the trout present in Clear Creek between Georgetown and Golden due to whirling disease (CPW, 2013c). Other species present in Clear Creek include brook trout (*Salvelinus fontinalis*), Snake River cutthroat trout (*Oncorhynchus clarki bouvieri*), fathead minnows (*Pimephales promelas*), common carp (*Cyrpinus carpio*), and various species of sucker (*Catostomus* spp.) (CPW, 2013c).

Spawning habitat for brown trout was previously identified in Clear Creek downstream of the Twin Tunnels Environmental Assessment project area, which extended from MP 241 to MP 244 (CDOT, 2013). No comprehensive spawning surveys have been conducted in the study area because of the limited direct impacts to aquatic species from the Proposed Action (See Section 6.2.6) with one exception; a survey to identify spawning habitat was conducted upstream and downstream of SH 103 Bridge over Clear Creek in November 2013 (Winkle, 2013). No spawning habitat was documented at this site (Winkle, 2013); however, spawning habitat may be present elsewhere in the study area.

Brown trout spawning habitat consists of clean gravel substrate that is aerated by oxygenated water flowing through the nest (or redd) and over eggs that have been deposited in the substrate. These conditions are typically located at the tail of a pool and are present downstream of the Twin Tunnels project area (CDOT, 2013). CPW conducted a survey to document brown trout redds in fall 2012 from Floyd Hill to the Scott Lancaster Bridge. A total of 49 redds were found along this stretch. A total of four redds were found adjacent to the Twin Tunnels study area (Winkle, 2013).

Benthic invertebrate communities known to inhabit or potentially inhabit Clear Creek are composed primarily of mayflies (*Ephemeroptera*), stoneflies (*Plecoptera*), caddisflies (*Tricoptera*), and midges. Based on sampling surveys conducted by CPW from 2004 to 2009, the aquatic macro invertebrate community of Clear Creek from just downstream of Idaho Springs typically has the lowest diversity and abundance compared to other portions of the stream (CPW, 2011). No sampling surveys have been conducted in the study area (Winkle, 2013).

Section 6. What Are the Environmental Consequences?

6.1 How Does The No Action Alternative Affect Biological Resources?

Under the No Action Alternative, continued highway maintenance and transportation improvements with approved funding sources would be implemented in the future. These maintenance and improvement activities could result in additional impacts to biological resources from construction noise, vegetation removal, and mortality during construction.

6.2 How Does The Proposed Action Affect Biological Resources?

Vegetation and Noxious Weeds

The Proposed Action would directly impact approximately 0.27 acre of shrub/scrub habitat that would be converted to transportation use. However, the habitat that would be converted is primarily disturbed roadside habitat that has already been degraded and provides little habitat value to terrestrial mammals. Direct impacts to riparian vegetation would be minor and would only occur on the south side of I-70. Approximately 0.28 acre of riparian vegetation would be impacted.

Temporary construction impacts would include approximately 0.35 acre of shrub/scrub habitat and 0.28 acre of riparian habitat

Construction activities would expose soils in areas that have been previously disturbed, creating a potential for the introduction and spread of noxious weeds in the study area. Noxious weed species that occur in the disturbed areas of the study area have the potential to spread into areas impacted by roadway construction. Clear Creek County is particularly concerned about the spread of Chinese clematis (Brown, T., 2013, personal comment to HDR).

Threatened and Endangered Species

The I-70 PEIS indicated that, corridor-wide, approximately 68 individual protected species identified by the USFWS, USFS, and CPW could potentially be affected by roadway widening, including four species along the corridor protected under the Endangered Species Act. However, the conclusions of this Tier 2 process analysis and consultation with USFWS indicate that the only federally listed species that could be affected by the Proposed Action is the Canada lynx (A. Michael, USFWS, 2013, pers. comm.).

Water use required for some construction activities would affect federally-listed species that are potentially impacted by depletions to the Platte River system. These species include the Least Tern, Piping Plover, western prairie fringed orchid, Whooping Crane, and pallid sturgeon. Measures outlined in the USFWS Final Programmatic Biological Opinion will be followed to minimize impacts.

No critical habitat for any federally-listed species occurs in the study area.

Canada Lynx Direct and Indirect Impacts

The majority of project improvements would be located within existing highway right-of-way or easements and would require minimal vegetative clearing from the right-of-way. Habitat adjacent to the study area has been previously disturbed by past roadway construction activities and development. While the areas north and south of the study area are mapped as potential lynx habitat, much of the study area (generally east of Downieville) is below 8,000 feet and is generally low- to moderate-quality habitat. Therefore, direct impacts to existing vegetation and lynx habitat in the study area would be minor and limited in geographic extent.

The Proposed Action would require the construction of nine new retaining walls from MP 232 to MP 242. The retaining walls range between 2 feet and 5.8 feet exposed wall height and 75 feet to 875 feet in length. The retaining walls would be located along steep slopes comprised mostly of rip rap and fill with sparse vegetation. These areas provide very little, if any, usable habitat for the lynx or any of its prey species.

Lynx are generally found above 8,000 feet and, therefore, the only areas that may potentially overlap with lynx use are the two retaining walls located at Lawson. Following are the details of these walls:

- Lawson Wall: 750 feet long and a maximum height of 4 feet and 3 inches. A crash barrier would be installed on top of this wall, raising the wall an additional 3 feet and 9 inches. The combined maximum height of the wall and crash barrier would by 8 feet and 6 inches. See Figure 14 for a rendering of the proposed wall.
- East of Lawson Wall: 375 feet long and a maximum height of 2 feet and 4 inches. A rail would be installed on top of this wall, raising the height an additional 27 inches. The combined maximum height of the wall and rail would be 4 feet and 7 inches.

Figure 14. Proposed Lawson Retaining Wall

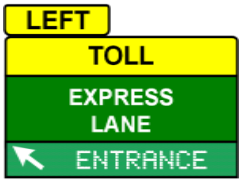
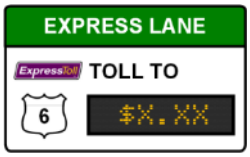
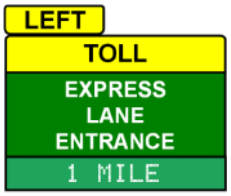
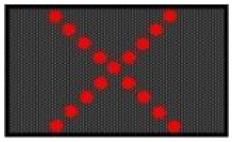
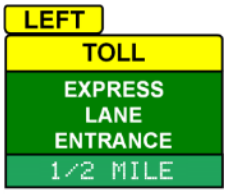
This retaining wall would be constructed in an area where there are existing residential properties adjacent to the highway. Given the residential land use in the area adjacent to the proposed retaining walls, the year round presence of humans, and the location being in the lower range of elevation associated with lynx habitat, and lynx are unlikely to cross the highway in this area. Thus, new retaining walls would only slightly increase the barrier effect of a highway that already has many barriers to wildlife movement, resulting in a moderate, but limited in geographic extent, effect to lynx.

The roadway between approximately MP 232 and MP 242 would be widened up to 3.5 feet to accommodate the managed lane, and on-ramps in the corridor would be widened 4 feet to 8 feet, and up to 14 feet at SH 103, which would not be considered lynx habitat, resulting in a slightly wider paved highway segment than what currently exists. The slight increase in paved highway would lengthen the crossing distance for lynx and would add another lane of traffic during operation of shoulder lane. In addition, average speeds would be increased during peak periods compared to existing condition. It is not anticipated that lynx would cross the highway during peak period operations because of the volume of traffic and human activity; therefore the higher

speeds and wider roadway would likely not impact lynx during operation of the peak period shoulder lane.

Implementation of the Proposed Action would require the use of electronic signs that employ either static or dynamic lighted messages to motorists from MP 230 to MP 243. Lighted signs have the potential to discourage individual lynx from attempting to cross the highway, which could increase the barrier effect of I-70 in the study area. The signs most likely to overlap with lynx habitat are located in areas over 8,000 feet in elevation (MP 230 to MP 234). In this stretch the Proposed Action is anticipated to add a maximum of 10 signs. These signs are presented in Table 5.

Table 5. Anticipated Signage

Mile Post	Sign	Mile Post	Sign
MP 229.7		MP 231.75	
MP 230.3		MP 232.4	
MP 230.7		MP 232.9	
MP 231.25 (double mounted, two signs total)		MP 233.15	
MP 231.25		MP 233.55	

All these signs would be electrified and displaying a message at all times. There would be no additional external lighting on these signs. The minor increase in lighting could dissuade individual lynx from attempting to cross the highway in these locations. Therefore, the addition of

electronic signs in the study area could result in a moderate, but geographically limited, effect to lynx.

Construction activities would temporarily affect lynx in the vicinity of the study area for slightly over one year because of disturbance from construction noise and equipment and increased human presence. Although temporary disturbance from construction activities may occur, the effect is expected to be minor and temporary. Lynx would be expected to avoid the area during construction due to the increased noise and human presence, but their "normal" behavior would be expected to return shortly after the completion of the project.

Water quality BMPs associated with the project would not increase the barrier effect.

Although the proposed project would result in a small amount of permanent loss of habitat for lynx, much of the study area is below 8,000 feet and is generally low- to moderate-quality habitat. Temporary impacts from construction disturbance would be minor and would not result in any permanent displacement or disturbance of lynx. The new retaining walls would slightly increase the barrier effect of a highway that already has many barriers to wildlife movement; however, retaining walls will be located in areas where existing residential properties are located and therefore unlikely locations where lynx would cross I-70. Electronic signage in the study area may discourage individual lynx from attempting to cross the highway, which could increase the barrier effect of I-70 in the study area. However, given the disturbed and low-quality habitat of the study area, the temporary nature of construction activities, and the proposed mitigation measures, it has been determined that the Proposed Action *may affect, but is not likely to adversely affect* the Canada lynx.

The Programmatic Consultation Agreement for impacts to Canada Lynx applies to the Colorado Division of FHWA and CDOT projects within suitable lynx habitat with discountable or insignificant impacts that are below the threshold of adverse effects, as defined by the Endangered Species Act of 1973, as amended. Projects that meet the no effect and not likely to adversely affect criteria set forth in this document will be covered by a blanket concurrence letter issued by the USFWS, and would not require further consultation.

Boreal Toad Direct and Indirect Impacts

The Proposed Action would result in no direct impacts to boreal toads as there are no roadway or signage improvements proposed within their habitat. There would be no indirect impacts as no additional impervious surface would result from the Proposed Action adjacent to boreal toad habitat.

Common Garter Snake Direct and Indirect Impacts

The Proposed Action could result in some direct mortality to common garter snakes from construction activity in riparian habitat. The use of heavy equipment during construction may cause common garter snakes to temporarily avoid riparian areas adjacent to construction activity. Direct impacts to riparian vegetation would be minor and would only occur on the south side of I-70. Approximately 0.28 acre of riparian vegetation would be impacted.

Terrestrial Mammals

Direct impacts to terrestrial mammals would include minimal loss of roadside habitat that would be converted to transportation use and a very minor increased barrier effect during operation of the managed lane. The Proposed Action would directly impact approximately 0.27 acre of shrub/scrub habitat and 0.28 acres of riparian vegetation, which would be converted to

transportation use. However, the habitat that would be converted is disturbed roadside habitat that has already been degraded and provides little habitat value to terrestrial mammals.

The Proposed Action would require the construction of 10 retaining walls from MP 232 to MP 242. The retaining walls range between 2 and 5.8 feet exposed wall height and 75 feet to 875 feet in length. Each retaining wall would have an additional 2-foot and 10-inch guardrail placed on top. The retaining walls would be located along steep slopes comprised mostly of rip rap and filled with sparse vegetation. While the retaining walls would increase the barrier effect of I-70 by making it more difficult for terrestrial mammals to cross in the locations of the new retaining walls, the total length of new retaining walls would be approximately 3,600 feet out of 13 miles of similar habitat, which would be just as likely to be used for crossing. Most of the retaining walls would be short in length (the average wall length is 400 feet) with long gaps in between where no retaining walls are proposed. The majority of the retaining walls are proposed in areas where there are no AVC hotspots. However, there are two proposed retaining walls west of an AVC hotspot located at MP 238 that could create a crossing barrier (see Figure 2). The proposed retaining walls would be 325 feet in length and have a maximum exposed height of approximately 2.9 to 3.4 feet (plus the 2-foot and 10-inch guardrail). The AVC located at MP 238 has nine documented collisions from 2001 to 2013. Therefore, the addition of retaining walls in this location is not expected to increase AVCs because of the low collision numbers in this area. These walls, originally considered as one larger wall, were separated into two separate walls specifically to minimize the barrier effect and improve permeability. The new retaining walls would slightly increase the barrier effect of a highway that already has many barriers to wildlife movement, resulting in a moderate but limited in geographic extent effect to terrestrial wildlife.

Median and/or shoulder barriers are already present along this stretch of I-70 and, therefore, wildlife is already accustomed to the barriers. The addition of median jumps, a modified median type with a lower height and a open base, would allow wildlife to more easily cross the highway (See Section 7).

The disturbance of wildlife habitat from the Proposed Action could result in some direct mortality to small mammals from construction activity. The use of heavy equipment during construction may cause terrestrial mammals to avoid the area, but this would be temporary.

Raptors and Migratory Birds

Direct impacts on migratory birds would include loss of roadside habitat that would be converted to transportation use. The loss of 0.27 acre of shrub/scrub would slightly reduce habitat availability for migratory birds in the study area. However, the habitat that would be converted is disturbed roadside habitat that has already been degraded and provides little habitat value. Removal of 0.28 acres of riparian vegetation would reduce migratory bird nesting habitat. However, riparian trees and shrubs removed during construction will be replaced (See Table 5). There are no anticipated direct impacts or temporary construction impacts to wetlands located in the study area.

Construction of the Proposed Action could result in some direct mortality to migratory birds, and displacement of birds from habitat near construction areas. Construction of the Proposed Action would be conducted from summer 2014 through summer 2015. A pre-construction survey for nesting birds will be completed prior to beginning construction activities and tree removal in summer 2014.

Riparian Vegetation

Direct impacts to riparian vegetation would be minor and would only occur on the south side of

I-70. Approximately 0.28 acre of riparian vegetation would be impacted to facilitate construction of the improvements. Riparian trees and shrubs removed during construction will be replaced as stipulated in CDOT's Guidelines for Senate Bill 40 Wildlife Certification (See Table 5). Temporary construction impacts include an additional 0.28 acre of riparian habitat. There are no anticipated direct impacts or temporary construction impacts to wetlands located in the study area.

Construction of the Proposed Action would likely meet the application criteria and would require application for SB 40 Wildlife Certification from CPW. The application for SB 40 Wildlife Certification will be made by the CDOT Environmental Project Manager. The application must be made at least 60 days prior to any planned construction. CPW will complete its review within 30 days and issue an SB 40 Certification or request additional information or mitigation commitments.

Aquatic Species

Direct impacts to aquatic species would occur in one location west of SH 103, where an existing retaining wall would undergo maintenance. The refacing of this retaining wall would permanently impact 450 square feet of the Clear Creek streambed. Temporary impacts resulting from construction would impact approximately 4,500 square feet of Clear Creek.

Construction of the retaining walls and new roadway surface may cause temporary erosion of disturbed soils, sedimentation downstream, and accidentally spilled fuels. Invasive aquatic species could be introduced into Clear Creek by construction personnel, tools, equipment, and machinery.

The implementation of permanent water quality best management practices (BMPs) would result in improved water quality conditions compared to existing conditions.

Section 7. What Mitigation Is Needed?

7.1 What Tier 1 Mitigation Approaches Are Relevant?

Mitigation approaches for terrestrial wildlife from the I-70 PEIS that are relevant to this project are outlined in the ALIVE MOU. These measures are intended to reduce AVCs and increase habitat connectivity throughout the I-70 Mountain Corridor. These measures include, but are not limited to:

- Use of underpasses or overpasses dedicated to wildlife movement, fencing, berms, and vegetation to guide wildlife to crossing structures.
- Use of signage to alert motorists of wildlife presence.
- Protection of existing natural features that enhance habitat connectivity to the extent practicable.

Mitigation approaches for aquatic resources from the I-70 PEIS that are relevant to this project include the following:

- Use BMPs and erosion control measures to reduce soil losses, soil inundation, and sedimentation in areas adjacent to the construction area and provide sufficient cross-slope drainage structures during new construction to allow natural hydrologic conditions to be maintained on both sides of the right-of-way.

No mitigation strategies specific to protected species were included in the I-70 PEIS.

Mitigation strategies for vegetation and noxious weeds from the I-70 PEIS that are relevant to this project include the following:

- Identify areas of potential habitat restoration, in coordination with local entities.
- Manage the clearing and earthmoving operations to minimize the potential for weeds to infest new areas and/or increase in abundance through the construction disturbance area. This includes the application of BMPs to all construction sites to manage open soil surfaces and topsoil stockpiled for reuse, including landscape and planning designs that incorporate the use of native vegetation and integrated noxious weed controls.
- Prepare and implement a Noxious Weed Management Plan prior to construction to identify the status and location of noxious weed infestations in and near the study area and identify control methods (e.g., herbicides) and best management practices that will be used to eradicate or control weeds during and after construction.
- BMPs generally include, but are not limited to, minimization of soil disturbance, use of native species in seeding and revegetation plans, use of weed-free hay, topsoil management, equipment cleaning and management, and coordination with relevant stakeholders, such as County Weed Supervisors.

7.2 What Mitigation Is Needed For This Project?

Applicable mitigation measures are shown in Table 6.

Table 6. Mitigation Commitments for Biological Resources

Activity	Location	Impact	Mitigation
Threatened and Endangered Species			
Construction activities that can cause water depletions include water used for compaction, cement mixing, detention ponds, dust control, and dewatering for access and construction in wetlands and riparian areas.	Throughout the PPSL study area	Platte River species could be impacted by water depletions in tributaries such as Clear Creek.	Mitigation for impacts caused by water depletions on federally listed species will be addressed by FHWA and CDOT participation in the Platte River Recovery Implementation Program and South Platte Water Related Activities Program. Water used for this project will be reported to the USFWS at the completion of the project.
Roadway construction and sign installation.	In projects area located above 8,000 feet	Temporary disturbance or displacement of lynx	The project Engineer shall immediately report to the CDOT Biologist any lynx sightings within or adjacent to the proposed project area during construction. Coordination with the USFWS will be conducted within 24 hours and a temporary work stoppage may be required, per USFWS direction.
Nighttime construction.	In projects area located above 8,000	Temporary disturbance or displacement of	Night work will be limited to a maximum of 4 consecutive nights followed by three nights of inactivity to allow lynx the opportunity to cross

Table 6. Mitigation Commitments for Biological Resources

Activity	Location	Impact	Mitigation
	feet	lynx	the highway. Night work restrictions will only occur at elevations above 8,000 feet (MP 236-MP 243). Nighttime construction will be geographically concentrated in order to allow lynx the opportunity to cross the highway.
In areas where erosion control blankets are used.	Throughout the PPSL study area	Mortality of the common garter snake	Erosion control blankets will have flexible natural fibers to allow for safe passage of snakes through the erosion control blanket.
Raptors and Migratory Birds			
Construction related disturbance between April 1 and August 31.	Throughout the PPSL study area	Potential loss of eggs or young of nesting migratory birds and/or raptors	If construction is to commence between April 1 and August 31, to avoid impacts to nesting birds in accordance with the MBTA, a qualified biologist will conduct a nest survey prior to construction. If active nests are found, coordination with CPW and USFWS is required to determine an appropriate course of action, which may include, but is not limited to, a delay in construction to avoid the breeding season.
Construction related disturbance to raptors	Throughout the PPSL study area	Potential loss of eggs or young of nesting raptors	A pre-construction survey for nesting raptors will be completed within a half-mile buffer of the project area prior to construction. If any nesting raptors occur within the buffer area, then CPW "Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors" guidelines will be followed.
Terrestrial and Aquatic Wildlife			
Removal and replacement of an existing chain link fence.	Soda Creek Road and Montane Drive	Animal-Vehicle collisions and wildlife movements	Installation of 2-meter high wildlife fencing adjacent to Montane Drive. Removal and replacement of fencing where Soda Creek Road passes beneath the highway. The existing chain link fence will be replaced with a wildlife friendly 4-strand fence.
Retrofitting the existing median barriers near Idaho Springs.	Approximate milepost locations are MP 238.95, 240.05 and 241.00	Animal-Vehicle Collisions	Modify the existing median to increase permeability. Approximate milepost locations are MP 238.95, 240.05 and 241.00.
Construction work and rehabilitation of retaining walls within the two-year floodplain.	Throughout the PPSL study area	Introduction of invasive species.	Invasive mussel protocol will be followed as per SB 40 MOA.
Wetlands and Riparian			
Construction on or adjacent to I-70	Throughout the PPSL study area	Temporary loss of riparian habitat (trees and shrubs).	Riparian trees and shrubs removed during construction will be replaced as stipulated in CDOT's Guidelines for Senate Bill 40 Wildlife Certification, which state that trees removed during construction, whether native or non-

Table 6. Mitigation Commitments for Biological Resources

Activity	Location	Impact	Mitigation
			native, shall be replaced with a goal of 1:1 replacement based on a stem count of all trees with diameter at breast height of two inches or greater. Shrubs removed during construction, whether native or non-native will be replaced based on their preconstruction areal coverage. In all cases, all such trees and shrubs will be replaced with native species. Success criteria for trees and shrubs will be followed as per CDOT Spec. 214 as per SB 40 MOA.
Construction on or adjacent to I-70	The I-70/US 40 gore (wetland #1) and adjacent to Water Wheel Park (wetland #3).	Loss of vegetation and impacts to sensitive habitats.	Wetland/riparian areas adjacent to construction will be protected from construction activities by temporary and/or construction limit fencing.
Construction work and rehabilitation of retaining walls within the two-year floodplain.	West of SH 103 where the retaining wall is being reconstructed.	Direct and/or indirect impacts to waters of the United States.	Replacement of rip-rap along Clear Creek will be closely monitored to ensure that additional fill, beyond what is included in the Section 404 permit, is not placed within the ordinary high water mark.
Construction work and rehabilitation of retaining walls within the two-year floodplain.	Throughout the PPSL study area	Potential fuel spill.	Refuel equipment within designated refueling containment areas away from the ordinary high water mark and wetlands.
		Vegetation	
Vegetation and ground disturbing activities	Throughout the PPSL study area	Vegetation disturbance and ground clearing that creates potential noxious weed issues.	Reseed and protect temporary disturbance areas with CDOT approved best management practices and avoid disturbance to existing vegetation, to the maximum extent possible.
Vegetation and ground disturbing activities	Throughout the PPSL study area	Introduction of noxious weeds.	An Integrated Noxious Weed Management Plan will be developed during final design and implemented during construction to prevent the spread of noxious weeds into temporary disturbance areas.

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Appendix A.
SWEEP and ALIVE Meeting Minutes

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Meeting Minutes

Subject:	SWEEP Meeting #1
Client:	CDOT Region 1
Project:	I-70 Peak Period Shoulder Lane
Project No:	215164
Meeting Date:	September 20, 2013
Meeting Location:	CDOT Golden
Notes by:	Lorena Jones/Gina McAfee/Sandy Beazley

ATTENDEES: See attached sign-in sheet.

DISTRIBUTION: Attendees, SWEEP members, Project File

SUMMARY OF DISCUSSION:

(Action items are in **bold**.)

Introductions

Gina McAfee opened the meeting. Self introductions followed.

PPSL Project Overview

1. Gina gave an overview of the PPSL project. The plan is to add some minimal pavement just in the eastbound direction of I-70 between Empire Junction and Idaho Springs. The additional pavement would be used just during peak periods—approximately 3.5 percent of the time, eastbound direction, Sunday afternoons and also holiday afternoons—as a third lane going eastbound, instead of the two lanes we have right now. The third lane would be tolled—open to people willing to pay a toll to use the lane. The rest of the time, that pavement will be used as it is now—a shoulder.
2. For as much as half of the length of the corridor, there would be no need to add any pavement at all (see handouts). In area with additional pavement, there may need to be a retaining wall—to prevent encroachment into Clear Creek, the Clear Creek floodplain, riparian habitat, and private properties. At some interchanges, there will be widening at the acceleration and deceleration lanes. There is little widening on deceleration lanes and more widening on the acceleration lanes—but typically the widening is a sliver.
3. At the SH 103 bridge and interchange area, I-70 is on a sharper curve. Clear Creek and the Greenway are right next to I-70. It is a geographically constrained area and a separate Issues Task Force will examine improvements in this area, which could include a bridge replacement.
4. CDOT has not done a project of this nature before, but this same project (using the shoulder as a travel lane during peak periods) has been implemented in Minnesota, Virginia, and Massachusetts. The idea is to use the existing pavement to handle traffic, essentially maximizing the existing infrastructure to the greatest extent possible.

5. *Sarah Fowler*: Can you explain how CDOT got to the tolling decision versus an HOV operation? *David Singer*: In the metro area, where ridership is higher and it is a traditional Monday-Friday commuter corridor, HOV makes sense. On this stretch, with peak periods occurring on the weekend HOV is not as effective. What we are trying to do is give people options for a reliable trip.
6. *Sarah Fowler*: Can you change the guidelines to make it a 3-plus or a 4-plus HOV lane? What kind of tolling are you looking at? *Gina McAfee*: It will be a dynamic system with variable pricing based on the traffic volume and travel speed. It will also encourage use of transit. Implementing managed lanes is consistent with a recent statewide policy that CDOT has adopted for corridors where congestion is a problem.
7. *Sarah Fowler*: Could you have a combined lane where it is four more passengers and tolling? *David Singer*: I'm not sure how to go about that. Enforcement becomes a challenge. *Gina McAfee*: We looked at that on the Twin Tunnels project and we decided that enforcement would be the biggest constraint.
8. *Sarah Fowler*: How do you deal with not having a shoulder during peak period? *Gina McAfee*: We plan to have pull-out areas. CDOT has talked with emergency responders, and they are excited about the opportunities provided with this project. One emergency responder meeting has occurred to date.
9. *Neil Ogden*: We are developing the concept of operations and looking at signing techniques that would enable us to close the toll lane when needed during an emergency for emergency vehicles to be able to use that lane. The ability actively manage traffic can lead to improved response times.
10. *Gina McAfee*: Safety is of paramount concern to CDOT. When you look at studies of implemented projects, there is actually a reduction in accidents. A reduction in congestion typically leads to a decrease in associated accidents, such as rear end collisions. The current plan right now for the managed lane would be inside left lane, which tends to be safer than a right side shoulder lane
11. *Gina McAfee*: Other aspects of the project include a minimum widening, or possible none, at existing structures, except for SH 103, minimizing visual impacts due to signing, potentially noise walls although this analysis is pending, and the installation of water quality features.
12. *David Holm*: Regarding walls to prevent or minimize encroachment, is the goal to prevent any change in the channel? *Gina McAfee*: Absolutely. The project team is working hard to avoid any impacts to the channel and to the floodplain during the design phase.
13. *Kevin Shanks*: Walls would be 2-foot, 3-foot high walls. They are not like Twin Tunnels. The SH 103 wall is yet to be determined but most walls are pretty low.
14. *Gary Frey*: This sounds like a change from the last discussion at the last Technical Team meeting.
15. *Gina McAfee*: Since the last Technical Team meeting, the project team has been working to minimize the footprint, which is why the infrastructure needs have decreased.

16. *Kevin Shanks*: We'll be talking about some of the retaining walls, like at Lawson, in the next Technical Team meetings, and we will have some drawings/hand sketched simulations to show.
17. *Gina McAfee*: Also, we are going to be talking to the Technical Team to discuss moving toward the median versus moving towards the creek. We are hoping that we will get agreement from the PLT to move toward the median, thereby limiting encroachment towards the creek.
18. *David Singer* described the role of the Technical Team for the SWEEP members' benefit.
19. *David Holm*. For Twin Tunnels there is the intent to revegetate the riprap. Would that be part of PPSL? *Gina McAfee*: We are definitely looking at revegetating but not sure about riprap. We don't know if we are going to be that close to existing riprap. *Kevin Shanks*: For Twin Tunnels, we did have to take all riprap out. There are some slopes that we are actually going to be planting willows in locations where we have soil and water, which is adjacent to the creek. For PPSL we are trying to avoid impacts in areas immediately adjacent to the creek.
20. *Sarah Fowler*: Doesn't look like there is much impact to waters along this corridor. *Gina McAfee*: That is correct. Sirena and Sandy went on a field survey recently and confirmed that wetlands concerns are minimal. *Sandy Beazley*: The wetlands we were able to delineate were generally removed from the project, on the south side of the creek.
21. *Sarah Fowler*: What about riparian? *Gina McAfee*: Riparian impacts will be calculated. With a shift to the median these impacts would be minimized.
22. *Gary Fre*y: Are you going to characterize the biomass in the Creek *Gina McAfee*: We can certainly check into it, but we are anticipating minimal impacts. *David Singer*: Paul Winkle did a lot of that bio mass work for Twin Tunnels already. *Gary Frey*: It has points along the stream that is monitored for bio mass, but I don't know if it is within this reach. *David Singer*: We will take a look at what is being conducted for ongoing projects and we can get input from those projects, but at this point we don't know. *David Holm*: There is a presentation that was prepared by Paul Winkle summarizing biomass and creel census data for Clear Creek. *Gina McAfee*: Can we have a copy of that presentation? David will send a copy of the presentation to Gina.
23. *Kevin Shanks*: Though this project does not have much impact, opportunity for BMPs for sediment control exists for this project.
24. *Gina McAfee*: The schedule for this project is very aggressive. We are planning to open this project to traffic in summer of 2015.
25. *David Holm*: With all that's going on in northern Colorado related to flood repair, is the schedule realistic? *David Singer*: The same question has been asked about the RAMP projects, and we've heard from the Commission that RAMP funded projects are going ahead. *Gina McAfee*: The National Guard is doing some repairs on US 36 and SH 7, so that work will not use any resources from CDOT. *Kevin Shanks*: CDOT is mobilizing right now to begin work. Given the lull in construction activity due to a down economy these national firms can move equipment and labor to Colorado as needed, for both flood related work and other projects.

SWEEP MOU Review

Gina introduced the group to the MOU and asked if anyone has any questions.

Current Information and Updates

Clear Creek SCAP

1. *Robert Krehbiel* provided an overview of the Clear Creek SCAP. It is being issued for final approval, which includes a SCAP implementation component. CDOT will implement what they can for this project but the PPSL concept requires people to drive on the black top since there is no shoulder. This project will not allow us to implement 100% of what is in the SCAP—but probably 30%. We will implement sedimentation control, retrofit any inlets, add sediments basis adjacent to walls and pull out areas. There is no inlet on the shoulder in the eastbound section. There is a limited number of BMPs that we can do on this project.
2. *Gary Frey*: Is there anything on this project that precludes implementing the SCAP? *Kevin Shanks:* Not long term. Pretty much curb and gutter, if you don't have curb and gutter, when it rains hard, the hazard would be all that water sitting on the road because there is no curb and gutter.
3. *Gina McAfee*: This is an interim project—not a long-term solution. CDOT is still working with FHWA through the CSS process to define exactly what interim means. There would likely be monitoring on how it's used over time. And what other projects are coming along in the corridor and how the PPSL project might fit.
4. *Gary Frey*: Are you developing a decommissioning plan? *Gina McAfee*: We have not gotten into that yet.
5. *David Singer*: We set up a check-in consistent with the ROD—which is 2020. For the five years between opening to traffic in 2015 and 2020, we hope to gather enough data to see if this makes sense. *Gina McAfee*: We are looking at traffic volume triggers, potentially. When traffic reached a certain volume, CDOT would look at more long-term options.
6. *David Holm*: What about westbound? *Gina McAfee*: We are not touching westbound at all—not as a part of this project.
7. *David Holm*: What about maintenance commitment? With the SCAP, is CDOT buying into the additional maintenance needed under the SCAP. *David Singer*: We put together three levels of maintenance involvement: robust, moderate and minimal, with minimal being likely. We are working with CDOT Maintenance to determine what is maintainable.
8. *Robert Krehbiel*: The SCAP did recommend enhanced maintenance because we can't just build all the water quality features unless they will be maintained.

Twin Tunnels

1. *David Singer:* The process that we are doing today is process that we developed in the last couple of years through the I-70 PEIS and Twin Tunnels projects, which is proving effective. We would like to apply some of those successes to this project. For Twin Tunnels, CDOT is opening the tunnel in December and restoring the frontage road to its original condition. There

are a lot of people involved in that partnership. Holly is working with CPW on the ultimate removal and disposal of materials that have been contaminated.

2. *Steve Laudeman*: They did not encounter any of those materials, fortunately. CDPHE has capacity at the Church Placer site (30,000 cubic yards of capacity for historic mine waste). We need to work with our funding partners within EPA.
3. *Neil Ogden*: CDOT is not seeing very much contaminated materials in the SH 103 area. At this point design is not far enough along to estimate any numbers about excavation.
4. *Steve Laudeman*: I know we did the Big 5 mine dump. The tunnels on the north side of I-70, west of Idaho Springs. They have a bridge across and they dump some of their waste on the west side.
5. *David Singer*: For Twin Tunnels, we put in three spill containment areas. We have impacts to riparian vegetation. We are working with CPW under the SB 40 provisions to revegetate the game check area toward the East Portal.

   The partnership with the City of Blackhawk has been a nice tool in place for Blackhawk and instills some trust between CDOT and the contractors.
6. *Kevin Shanks*: What happened in Twin Tunnels is actually reconstructing riparian habitat. We opened the floodplain to reconnect the river with those riparian habitats, and that is beyond Senate Bill 40.
7. *David Holm*: When you talk about opening the floodplain and restoring the frontage road, what do you mean? *David Singer*: It means opening the road to its original state, but there will be an improvement over what was precondition—for the bicyclists. This will be open summer/fall 2014.
8. *Sarah Fowler*: What about the opening on Halloween? *David Singer*: That changed. The months of November and December are lower risk.

Terrestrial and Aquatic Wildlife

9. *David Singer*: CDOT has put together an inventory of terrestrial and aquatic wildlife along the I-70 Mountain Corridor. Milepost limits for roadway improvements are MP 233 at Empire Junction and we go to MP 241 at East Idaho Springs. There should be no changes in terms of aquatic mobility, meaning there will limited impacts to Clear Creek
10. *Gina McAfee*: At this point, we are not aware of any changes to be made to any of the culverts.
11. *Kelly Larkin*: Did you guys survey them or did you do any models? There is a model you can run to determine lows and highs.
12. *Steve Long*: Can you put that in the context of running that model for the recommendations that have already been made in the 2011 study? Was that model used? *David Singer*: Yes, we can take a look at that and take a look at what the triggers are.

Historic Mine Works

1. *Gina McAfee*: We received two maps from Clear Creek County that show at least what we are aware of right now—mill sites, mine works. These are the maps from the I-70 PEIS and will be used to inform the design team of potential hazards.
2. *David Singer*: It might be of interest to this group to hear about the cadmium runoff project. It doesn't tie into the PPSL project, but it is in the same stretch. It's on the north side of I-70. *David Holm* gave an overview of the project—noting the issue about water run-on (rather than runoff) that runs into the highway as opposed to runoff water. Dealing with mining contaminated runoff from cadmium and an unnamed drainage. The sediment pond is full of sediment right now.

Role of SWEEP on the PPSL Project

1. Gina wanted to confirm the role of the SWEEP, which is to:
   a. Identify SWEEP-related issues in this project segment.
   b. Develop recommendations through the SWEEP implementation process.

Implementation Process

1. *David Holm*: This area has cadmium. Having appropriate BMPs and acknowledging the reality that there are contaminated materials. Any sediment removal activities are a 303(d) credit.
2. *Sandy Beazley*: There is standing water, essentially a small pond, in the gore at US 40, and the wetland that extends east from it is very narrow. East of SH 103, at Water Wheel Park, at the base of the fill slope (south side of the highway, north side of the creek), there is a wetland. The other wetland we saw is near the deceleration lane at Lawson and is the size of a bathtub. It is full of trash. It was just a depression of water near a roadway culvert. There are other numerous wetlands that we cannot get to because of high water levels or the danger of working from the interstate side. Even if we make the assumption that everything we see is a wetland, there would still be no impact as these features are at the base of fill slopes that will not be affected.
3. *Gary Frey*: Below Georgetown our concerns are more along the lines of the reproductive ability of the fish in the creek. This area is a tremendous recreation resource because it is so close to Denver. But, what we have in terms of actual creel census data, I do not know.
4. *Kevin Shanks*: I believe one of the County's concerns would be maintaining and enhancing access to the fishing area.
5. *David Holm*: A lot of access to Clear Creek has a lot of that riprap if you want to get down to the water. The purpose of the Fishing is Fun project is to create a stairway but using natural materials, like boulders, so people can get to the high water mark area. Location for the access points are 12 altogether. We coordinated extensively with CDOT.
   Gina asked David Holm if he could get this information and send it to the PPSL team. It would be helpful information.
6. *David Singer*: On the list was one access on the south side of SH 103. Was that taken out?
   David Holm: Yes, because there is a gas line there.

7. *Kelly Larkin*: You only mentioned barrier remediation for special status species—if we are trying to manage the fishery, fixing fish barriers on the streams makes sense. I didn't know if that was something that was decided by the Technical Team. *Gina McAfee*: This matrix came from the MOU, but the purpose of this meeting is to also identify other issues that are not on the matrix. There are some nice sections of spawning habitats within Clear Creek. Just something to consider.
8. *David Singer*: One other thing about recreation—there is rafting along this corridor. We have to work with the rafting community to make sure we are not making impact to their industry.
9. *Kevin Shanks*: And we definitely came up with compromises.
10. *Sarah Fowler*: Bank stabilization or habitat?

    Kevin Shanks: Anything, like people falling out of rafts. We know that those willows on the banks of the creek can get really thick, and if you fall out of the raft you could get stuck. Commercial rafting companies on Creak Creek would prefer to minimize the amount of vegetation that is within the creek, or overhangs it at surface level, for safety purposes.
11. *David Holm*: The Clear Creek Watershed Plan is being revised right now. Using a watershed approach, working at the 12-digit level. Looked at what the problems are with each of these watershed projects. By including them in this plan, may be eligible for funding. We are going to have a planning charrette. Sediment control projects also.

    Steve Long: How long does that process take?

    David Holm: This is a very quick process that will be over by this year. The final plan will be done in March. Look for a meeting in early November, even late October.

Next Steps:

1. *Sirena Brownlee* to contact Paul Winkle (CPW) for any data they have. Things we will be considering to fold into the NEPA process and design process.
2. For additional SWEEP meetings, it might be good to meet again after mid-November or early December after we have some specifics—especially the SCAP specifics, and we have developed the hydraulic plans and specifications. David Singer asked Robert when he thinks he could have the SCAP mitigation ready. Robert replied probably in late November. The plan will be to meet late November or early December.
3. *David Singer*: One other thought on roadway alignment—I think from a project level, we can guess what this group's thoughts are. But when we get the rest of the group that has other interests, like the aesthetic of the roadway, what would be the benefit of going toward the median?

    Fewer walls, less impact to riparian vegetation, one less manmade intrusion that you are seeing when you are on the south side of the creek or in the creek.
4. *Sarah Fowler*: The Clean Water Act says that you look at the least damaging practicable alternative. And moving toward the median is probably the least damaging practicable alternative. Not to mention that the median just collects trash, and is unsightly.

5. *Kevin Shanks*: Not impacting the riparian vegetation—riparian provides as a buffer between the creek and the highway.
6. *Steve Laudeman*: State superfund—I think we got GIS files that show outlines some of those. Who can I send the info? Send to David Signer.

Action Items:

Gina summarized some action items from today's meeting:

1. David Holm is going to send us the Power point prepared by Paul Winkle and the maps of the "Fishing is Fun" access improvements.
2. David Singer will check to see if the USFS fish passage model was used for the 2011 study.
3. Kelly Larkin is going to provide a link to the USFS fish passage model.
4. Coordinate with Holly to get information on previous research data.
5. HDR will contact Paul Winkle to get any data CPW already has.
6. Steve Laudeman will send GIS data about the Superfund sites.
7. We will look for any opportunities to enlarge culverts to make them easier for aquatic species to use.
8. We will pass along a recommendation for CDOT to do research on the effects of sanding operations on riparian vegetation and specifically what can be done to alleviate those effects.

SIGN-IN SHEET

SWEEP ISSUES TASK FORCE MEETING
September 20, 2013
9:00 a.m. to 12:00 p.m.
CDOT Homestead Conference Room 425C Corporate Circle, Golden

NAME	AGENCY	E-MAIL ADDRESS
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AGENDA

SWEEP ISSUES TASK FORCE MEETING
September 20, 2013
9:00 a.m. to 12:00 p.m.
CDOT Homestead Conference Room 425C Corporate Circle, Golden

1. **Introductions**
2. **PPSL Project Overview**
   a. Project background/purpose and need
   b. Current design and operating assumptions
   c. Schedule
3. **SWEEP MOU Review**
   a. MOU development and commitments
   b. Implementation process and matrix
4. **Current Information and Updates**
   a. Clear Creek SCAP
   b. Twin Tunnels
   c. *A Regional Ecosystem Framework for Terrestrial and Aquatic Wildlife along the I-70 Mountain Corridor in Colorado*
   d. *Guidelines for Improving Connectivity for Terrestrial and Aquatic Wildlife on the I-70 Mountain Corridor*
   e. Updates on location of historic mine works in this segment
5. **Role of SWEEP on the PPSL Project**
   a. Identify SWEEP-related issues in this project segment
   b. Develop recommendations through the SWEEP implementation process
6. **Implementation Process**
   a. Initial list of issues
   b. Identification of information and data needs
7. **Next Steps**
   a. Follow-up activities
   b. Need for an additional meeting

I-70 EASTBOUND PEAK PERIOD SHOULDER LANE

LIKELY COMPONENTS OF THE PPSL PROJECT (as of 9/11/13)

- A hybrid cross-section that utilizes the existing pavement width in as many places as possible in the corridor (with an estimate of up to half of the length of the corridor). This may reduce the need for retaining walls, but some retaining walls will still be needed to avoid private property or encroachment into Clear Creek.
- Minimal widening at either two or three of the eight interchange off-ramp deceleration lanes in the project corridor.
- Minimal widening at interchange acceleration lanes to include sliver widening at on-ramp tapers.
- Investigation of modifying the SH 103 bridge rather than replacing it. Also looking to see if we can design something that can be easily expanded in the future for unknown corridor improvements.
- Trying to minimize the need to widen other bridges.
- Minimize new signs—maximizing opportunities to use existing bridges for signs.
- Minimize the inclusion of new emergency refuge areas. The concept is to investigate use of already existing flat areas adjacent to the existing highway and at interchanges.
- Consider noise walls at locations both north and south of I-70 where residential uses are closest to the travel lanes.
- Water quality and air quality best management practices where feasible.

Figure 2. Mill Sites, Superfund Operable Units, Remediated Sites, and Highly Mineralized Zones in Central Clear Creek County

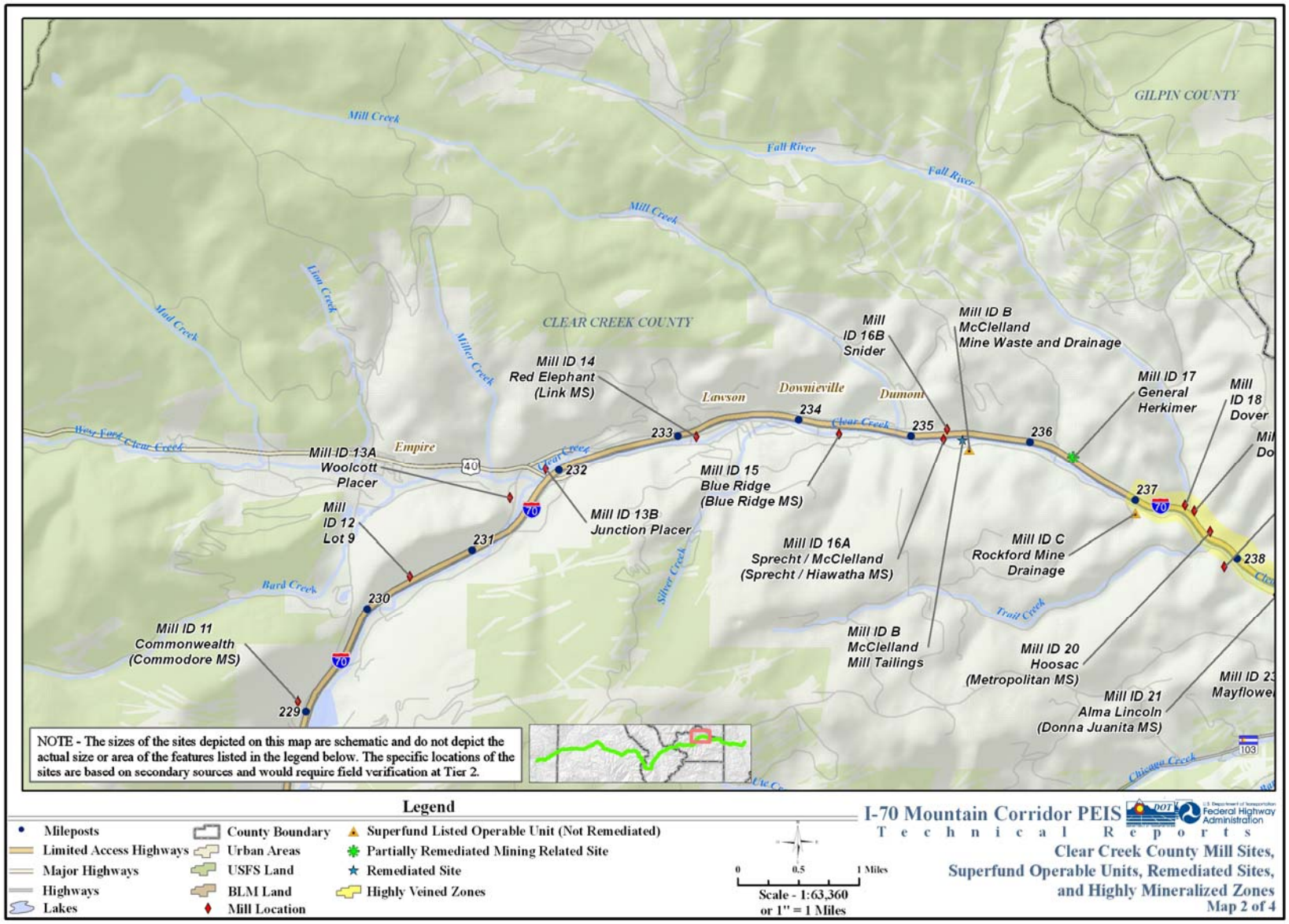


Figure 3. Mill Sites, Superfund Operable Units, Remediated Sites, and Highly Mineralized Zones in Eastern Clear Creek County

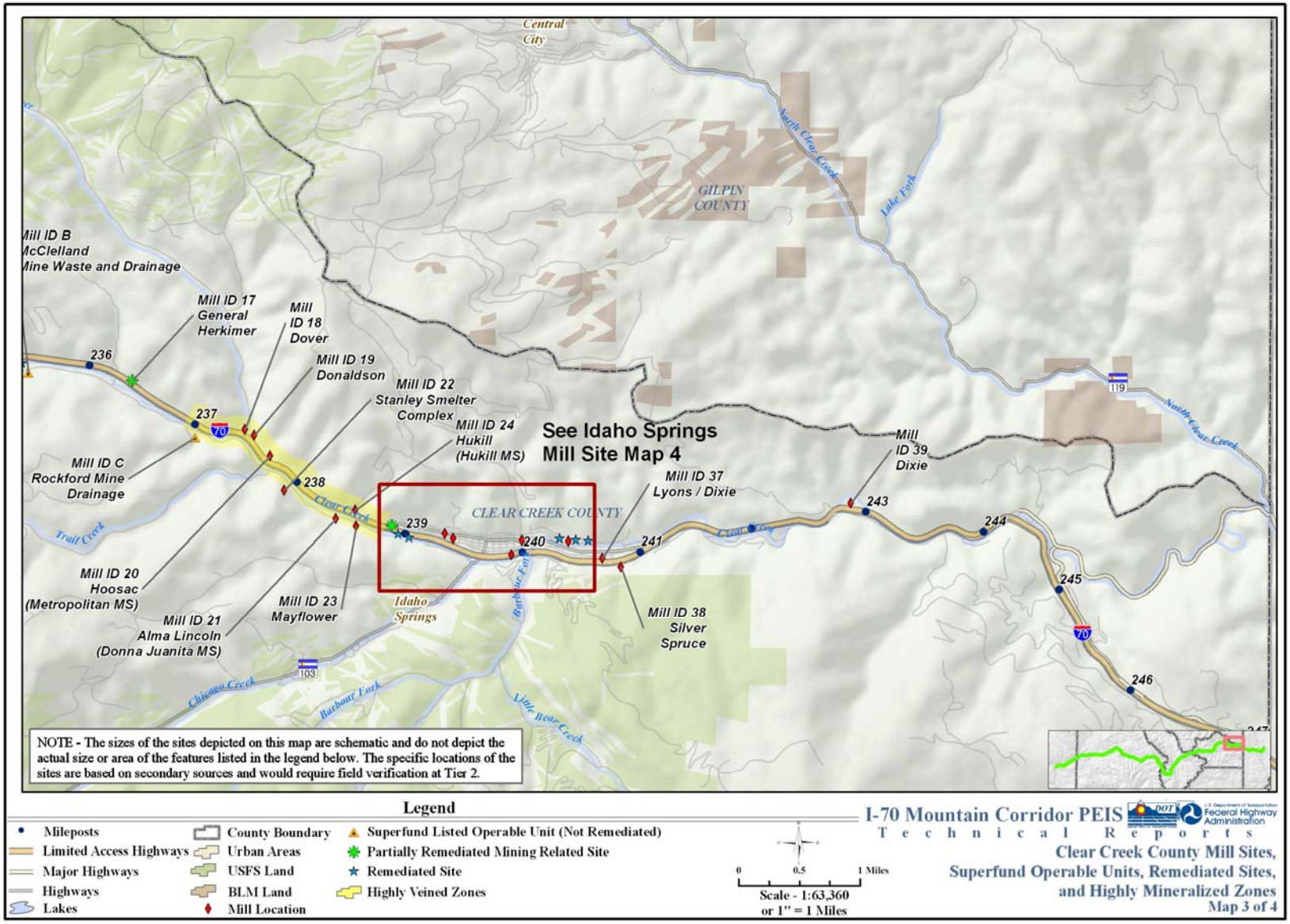
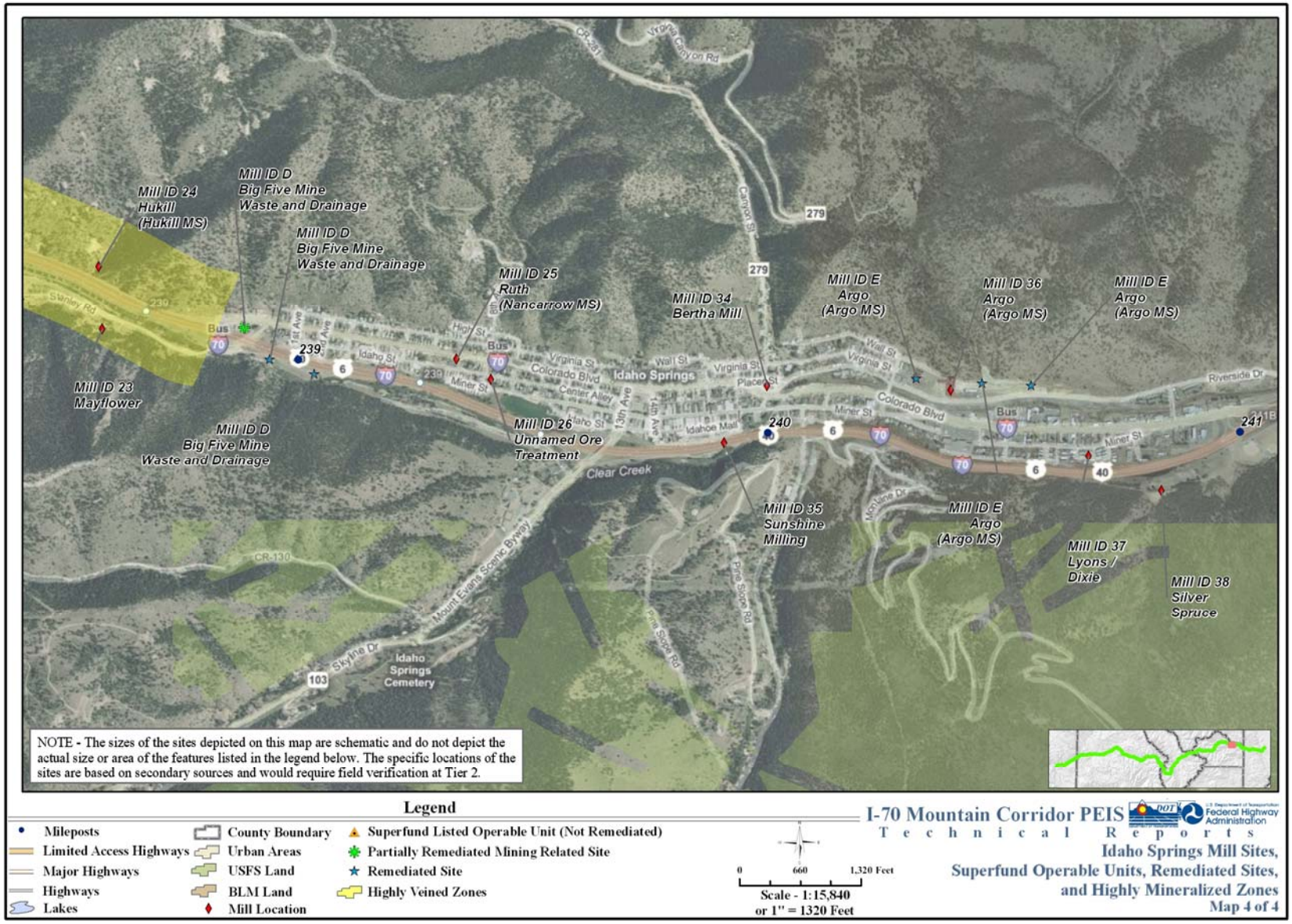


Figure 4. Mill Sites, Superfund Operable Units, Remediated Sites, and Highly Mineralized Zones in Idaho Springs



SWEEP IMPLEMENTATION MATRIX

The following matrix identifies the primary objective for each of the Issues of Concern identified in the SWEEP MOU and supports policy level mitigation for aquatic resources as it applies to the PPSL Project. The matrix outlines the inputs, considerations, and outcomes needed for project development. This approach is consistent with the Life Cycle Phases and 6-step Process in the CSS Guidance for the I-70 Mountain Corridor.

Water Quality

SEDIMENT MANAGEMENT **Objective** Reduce sediment loading in waterways from winter maintenance, erosion, and mine waste. **Applicable Laws** Clean Water Act Section 303(d)	**Inputs** • Existing water quality monitoring programs • Sediment Control Action Plans (SCAPs) • Site specific assessments **Considerations** • Does the existing SCAP provide strategies to avoid, minimize or mitigate impact to meet the objective? • What are the costs and benefits of each strategy? • What revisions are needed for the SCAP? **Outcomes** • Revise or endorse SCAP • Specific sediment management recommendations to meet the standards • Identify site specific mitigation strategies • Water Quality Management Plan
CLEAN WATER ACT, SECTION 303(D) LISTING OF STREAM SEGMENTS **Objective** Reduce non-point source loading impacting stream segments and reduce metals and nutrients loading to meet water quality standards. **Applicable Laws** Clean Water Act CERCLA RCRA	**Inputs** • 303d Listing impairments by segment • Gaining /losing segments **Considerations** • What are the baseline vs. event driven issues? **Outcomes:** • Remediation strategies for specific segments • Sampling Analysis Protocol (SAP) • Initiate site specific consultation with permitting agencies
MINE WORKINGS IN THE I-70 RIGHT-OF-WAY **Objective** Avoid intercepting underground mines and remediate contaminate mine water where possible. **Applicable Laws** CERCLA RCRA Clean Water Act	**Inputs** • Subsurface/ Geotechnical Analysis • Site Specific Avoidance opportunities **Considerations** • What design/controls are available? **Outcomes** • Water Quality design/controls/baselines • Mitigation strategies • Liability relief memo for specific project

SWEEP IMPLEMENTATION MATRIX

Water Quality

HIGHLY MINERALIZED ROCK FORMATIONS WITHIN THE I-70 MOUNTAIN CORRIDOR

Objective
Avoid cuts in rock walls that expose entrained heavy metals.

Applicable Laws
CERCLA

Inputs
- Site specific assessments

Considerations
- What alternatives minimize impacts?

Outcomes
- Avoidance or mitigation strategies

PREVIOUS CONSTRUCTION PRACTICES USING MINE WASTE AS ROADBED MATERIAL

Objective
Avoid disturbing mine waste in mining areas or mine waste previously used as roadbed material.

Applicable Laws
CERCLA
RCRA

Input
- Verify location inventory
- Site specific assessments

Considerations
- What alternatives minimize impacts?

Outcomes
- Avoidance or mitigation strategies
- Liability relief memo for specific project

Natural Habitat

WETLANDS PROTECTION

Objective
No net loss of wetland functions.

Applicable Laws
Clean Water Act Section 404
Executive Order 11990

Inputs
- Wetland location inventory
- Site specific assessments
- Wetland Functional Assessments
- Current guidance and regulations
- Coordination with USACE and USEPA

Considerations
- Do unique or highly functioning wetlands exist in project areas?
- Will project be subject to USACE Merger Agreement?

Outcomes
- Site specific mitigation, preferably within the same watershed
- Right-of-way acquisition
- Clean Water Act Permit or continued consultation

SWEEP IMPLEMENTATION MATRIX

Natural Habitat

AQUATIC SPECIES WITH SPECIAL STATUS DESIGNATION UNDER STATE AND FEDERAL RULE

Objective

No further degradation to, and where possible improvement of, stream systems containing species of special designation.

Applicable Laws

Endangered Species Act
CDOW Listing
Colorado SB 40

Inputs

- Species habitat inventory
- Existing recovery efforts
- Section 7 consultation on special status species
- Coordination with CDOW and USFWS

Considerations

- Do opportunities exist for project to enhance recovery efforts?
- Do fish barriers exist that should be removed or fish passages that should be designed?
- Should fish barriers be installed that will protect special status species?

Outcomes

- Identify possible recovery efforts

AQUATIC SPECIES AS A RECREATIONAL RESOURCE

Objective

Protect and improve aquatic systems as significant recreational resources.

Inputs

- Recreational resource inventory within corridor
- Project area stream designations
- Adopted local plans

Considerations

- Does the CDOW have special designation segments within the project area?

Outcomes

- Site specific mitigation strategies
- Partnerships
- Enhancement opportunities

Information

INFORMATION AND RESEARCH NEEDS

Objective

Identify and acquire information germane to watershed health.

Inputs

- Project specific data

Considerations

- What are the environmental effects of winter sand/salt procedures on aquatic vegetation?
- Are there alternative processes that would better minimize sand/salt deposits in the vicinity of rivers and streams?

Outcomes

- Data collection and use

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Meeting Minutes

Subject:	ALIVE Meeting #1
Client:	CDOT Region 1
Project:	I-70 Peak Period Shoulder Lane
Project No:	215164
Meeting Date:	September 24, 2013
Meeting Location:	CDOT Golden
Notes by:	Gina McAfee/Sandy Beazley

ATTENDEES: See attached sign-in sheet.

DISTRIBUTION: Attendees, ALIVE members, Project File

SUMMARY OF DISCUSSION:

(Action items are in **bold**.)

Introductions

Gina McAfee opened the meeting. Self introductions followed.

PPSL Project Overview

1. Gina gave an overview of the PPSL project. The plan is to add some minimal pavement just in the eastbound direction of I-70 between Empire Junction and Idaho Springs. The additional pavement would be used just during peak periods—approximately 3.5 percent of the time, eastbound direction, Sunday afternoons and also holiday afternoons—as a third lane going eastbound, instead of the two lanes that are presently operating. The third lane would be tolled—open to people willing to pay a toll to use the lane. The rest of the time, that pavement will be used as it is now—a shoulder.
2. Retaining walls will be required, although the extent is not known. Widening at some acel/decal lanes are anticipated, this includes up to 6 feet of widening in isolated instances. Improvements at SH 103 may include a bridge replacement. It is unlikely that other bridges/structures will be widened. Noise walls may be added, these details are unknown as well. Water quality features are included, as are emergency pull-outs.
3. The alternative overview handout shows the anticipated widening. Approximately ~1/2 of the corridor will require widening and this widening, outside of the acel lanes, is anywhere from 0 foot to 3.5 feet of additional pavement.
4. Preliminary design will be done in late November, final design in spring 2014, construction in summer 2014, and open to traffic summer 2015.
5. Two LIZs are located in the project corridor.
    a. Clear Creek Junction: Clear Creek Junction improvements are being implemented as part of the Twin Tunnels project. The PPSL project will only have signage improvements in this area. Improvements associated with the Twin Tunnels project include fencing work, culvert

improvements (installation of a natural substrate) and increasing the bench beneath the bridge to facilitate wildlife movement.

b. Empire Junction: At Empire Junction there is a large amount of infrastructure converging, the ultimate goal at this location would be to consolidate these barriers when the interchange is reconstructed. The PPSL project would need to not preclude any future LIZ related improvements in this area.

6. David described the completion of recent studies that focused on wildlife and aquatic species and noted how these identified the new LIZs that are described above.
7. Culvert extensions are a possibility. Culvert replacements are unlikely since no infrastructure replacement is anticipated. The culvert discussion focused on CR 271 (Spring Gulch) and changes that could be made to the box culvert that allows residents access to the north side of the highway. The purpose of these improvements would be to enhance wildlife usage of this culvert.
8. A site visit would be beneficial to visit hotspots for AVCs and other areas of concern.
9. Critical sites include:
    a. Empire Junction
    b. The bridge at Dumont (MP 235)
    c. The undercrossing at CR 271/Spring Gulch (MP 236.2)
    d. Large box culverts located at
        i) Fall River Road (MP 237.5)
        ii) Spring Gulch (MP 236.2)
        iii) Mill Creek (MP 234.8)
        iv) Clear Creek (MP 232.3) (Empire Junction)
10. What does the group think about the barrier effect of the project?
    a. Retaining walls include a barrier on top, which adds 3 feet of additional height. The Type 10 barrier used on Berthoud Pass has shown to be a barrier as deer are reticent to jump it. The narrow shoulders associated with the PPSL means that during peak periods, animals may be standing in a travel lane if they are reticent to jump a barrier.
    b. Loss of median reduces potential refuge area as an animal crosses the highway. There is a tradeoff in that encroaching into the median means fewer walls, so the question is - which will inhibit wildlife the most. Encroachment into the median ranges from 2 feet to 6 feet (out of a median width of 20 feet to 22 feet). CDOT and CPW have coordinated in the past on barrier types in the median to help facilitate wildlife movement.
    c. Inclusion of revegetation along retaining walls could provide cover to wildlife, but also serve as an attractant.
    d. The additional pavement is of little concern as it is fairly minimal, so the team should focus on the barrier and median reduction concerns. The real question is—for each specific location where we might include a wall, is that a location that is used by wildlife?

e. West of Empire, where it is only signage improvements, these signs will likely be off to the side, not requiring overhead gantries. It is unlikely these signs would be lit, which is of benefit to lynx. Most lighting changes would occur at the interchanges and these areas are already lit. Brock asked if the lights could be motion triggered, so they are not on all the time

f. Flashing lights will be used in the corridor, but these would be in use only when the PPSL is open. These lights could occur every 1/2 mile. Animal crossings during peak periods are unlikely.

11. Lynx would be the primary T&E concern, as noted by Jeff Peterson, although since lynx are only above 8,000 feet, this may not be a concern. Francesca will follow up with Alison to identify her concerns. Downstream species will be covered by SPWRAP.
12. The project has the potential to reduce frontage road traffic, estimated at a 2 percent reduction, which will be an advantage to wildlife.
13. West of SH 103 the metal crib wall adjacent to Clear Creek will be replaced. This will involve work in Clear Creek. Per CPW, this work could be completed in the winter to minimize impacts to aquatic species.
14. Kelly and David are coordinating to determine if the fish passage model was used in deriving the ALIVE recommendations.
15. Kevin noted Gary Frey's request for additional regarding biomass in Clear Creek in the project area. The project team is coordinating with Paul Winkle (CPW) to determine what studies have been done. Revegetation along the creek would increase biomass and provide shade across the creek, although vegetation in the creek is counter to the desires of the rafting community.
16. The next ALIVE meeting should occur in late November or early December, once more design details (including where we might want to do some culvert enhancements and where we might want to add riparian vegetation) are known.

Next Steps and Action Items:

1. **David to provide the project team with the 9-page document describing the enhancement of terrestrial wildlife movement.**
2. **Sirena to setup a meeting or conference call with Jeff Peterson and other biologists (plus engineering staff) to discuss enhancements for wildlife in the study corridor.**
3. **Sirena to setup a field trip once locations of concern have been identified.**
4. **Sandy and Francesca to coordinate with Alison regarding T&E species.**

SIGN-IN SHEET

ALIVE ISSUES TASK FORCE MEETING
September 24, 2013
1:00 p.m. to 4:00 p.m.
CDOT Homestead Conference Room 425C Corporate Circle, Golden

NAME	AGENCY	E-MAIL ADDRESS
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Neil Ogden	CDOT	neil.ogden@state.co.us
Tammy Heffron	HDR	tammy.heffron@hdrinc.com

AGENDA

ALIVE ISSUES TASK FORCE MEETING
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1. **Introductions**
2. **PPSL Project Overview**
   a. Project background/purpose and need
   b. Current design and operating assumptions
   c. Schedule
3. **ALIVE MOU Review**
   a. MOU development and commitments
   b. LIZ locations within the project and recommended mitigations
      - Empire Junction (MP 231.6 to 232.9)
      - Clear Creek Junction (MP 243.0 to 244.9) – signage improvements only in this area
4. **Current Information and Updates**
   a. Clear Creek SCAP
   b. Twin Tunnels
   c. A Regional Ecosystem Framework for Terrestrial and Aquatic Wildlife along the I-70 Mountain Corridor in Colorado
   d. Guidelines for Improving Connectivity for Terrestrial and Aquatic Wildlife on the I-70 Mountain Corridor
5. **Role of ALIVE on the PPSL Project**
   a. Identify ALIVE-related issues in this project segment
   b. Develop recommendations through the ALIVE implementation process
6. **Implementation Process**
   a. Initial list of issues
   b. Identification of information and data needs
   c. Initial recommendations
7. **Next Steps**
   a. Assignments for next meeting
   b. Need for an additional meeting

I-70 EASTBOUND PEAK PERIOD SHOULDER LANE

LIKELY COMPONENTS OF THE PPSL PROJECT (as of 9/11/13)

- A hybrid cross-section that utilizes the existing pavement width in as many places as possible in the corridor (with an estimate of up to half of the length of the corridor). This may reduce the need for retaining walls, but some retaining walls will still be needed to avoid private property or encroachment into Clear Creek.
- Minimal widening at either two or three of the eight interchange off-ramp deceleration lanes in the project corridor.
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- Trying to minimize the need to widen other bridges.
- Minimize new signs—maximizing opportunities to use existing bridges for signs.
- Minimize the inclusion of new emergency refuge areas. The concept is to investigate use of already existing flat areas adjacent to the existing highway and at interchanges.
- Consider noise walls at locations both north and south of I-70 where residential uses are closest to the travel lanes.
- Water quality and air quality best management practices where feasible.

Draft: Eastbound PPSL Hybrid Alternative Overview ***(1 of 4)***

1 Empire Junction Segment

Characteristic: Median width = approx. 22 ft. (EOP to EOP).

2 Lawson Segment

Characteristic: No median (type 7 barrier). Includes town of Lawson.

3 Downieville - Dumont Segment

Characteristic: Includes towns of Downieville and Dumont Median width = 22 ft.

Legend:

- = Potentially No Widening Required
- = Widening Requirements Unknown

Widening Anticipated:

- = 0 - 1 foot
- = 1 - 2 feet
- = 2 - 3.5 feet

09/23/2013

Draft: Eastbound PPSL Hybrid Alternative Overview ***(2 of 4)***

3 Downieville - Dumont Segment

Characteristic: Includes towns of Downieville and Dumont
Median width = 22 ft.

4 Fall River Segment

Characteristic: Median width = 21 ft.
Includes Fall River Rd exit.

Legend:

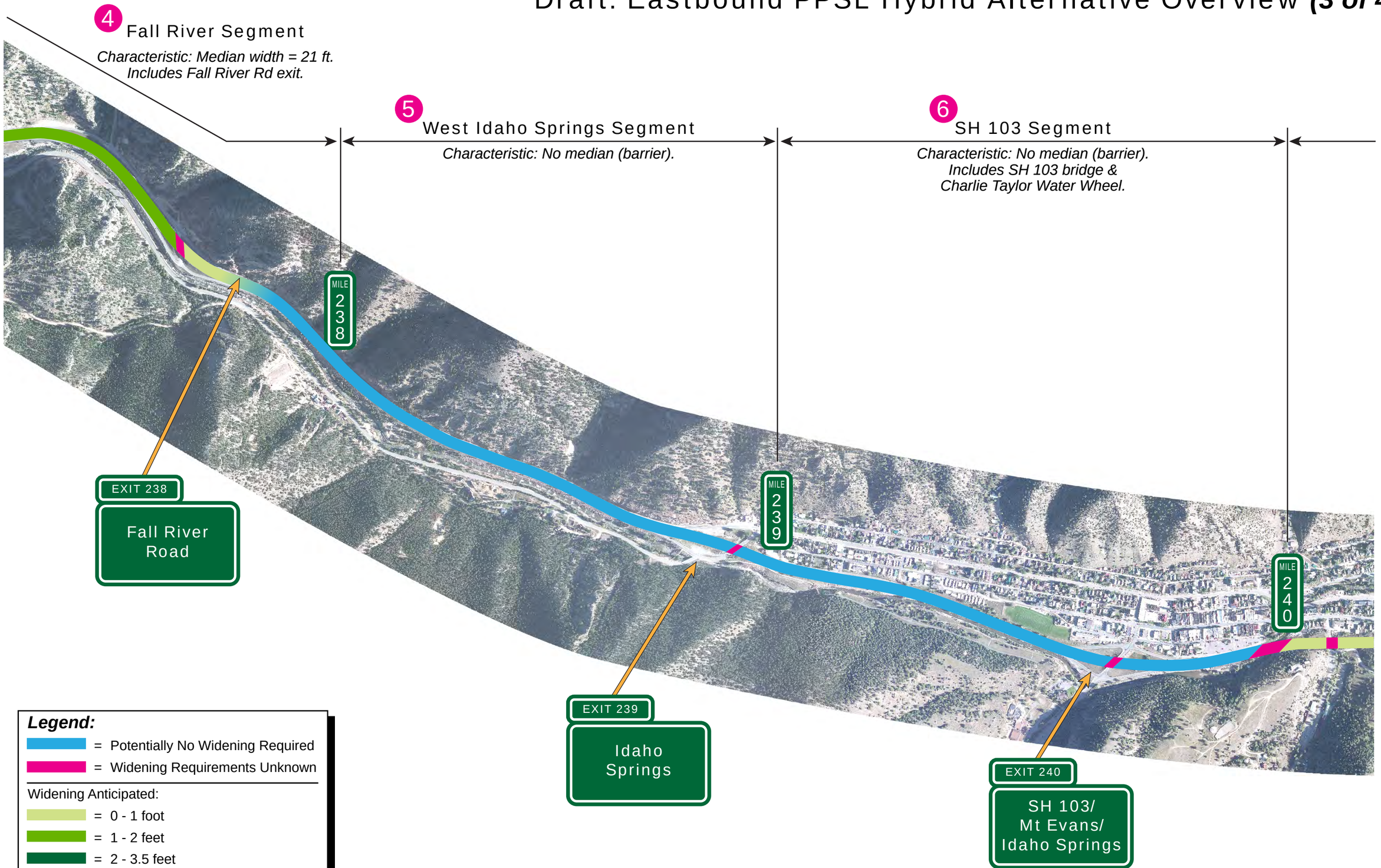
- = Potentially No Widening Required
- = Widening Requirements Unknown

Widening Anticipated:

- = 0 - 1 foot
- = 1 - 2 feet
- = 2 - 3.5 feet

09/23/2013

Draft: Eastbound PPSL Hybrid Alternative Overview ***(3 of 4)***



Legend:

- = Potentially No Widening Required
- = Widening Requirements Unknown

Widening Anticipated:

- = 0 - 1 foot
- = 1 - 2 feet
- = 2 - 3.5 feet

09/23/2013

Draft: Eastbound PPSL Hybrid Alternative Overview ***(4 of 4)***

7 East Idaho Springs Segment

Characteristic: No median (barrier).
End at Twin tunnels widening.

8 Twin Tunnels Segment

Characteristic: Twin Tunnels widened area.
Signage improvements only,
no roadway improvements anticipated.

Legend:

- = Potentially No Widening Required
- = Widening Requirements Unknown

Widening Anticipated:

- = 0 - 1 foot
- = 1 - 2 feet
- = 2 - 3.5 feet

09/23/2013

LIZ N: Empire Junction

LIZ N: Empire Junction

Mileposts: 231.6 – 232.9 *Early Enhancement Opportunities in LIZ?* No
LIZ Length: 1.4 miles

Target Species	*Species Movement Guilds*
Canada Lynx	Adaptive High Mobility Fauna

Secondary Target Species

Bighorn Sheep*	Black Bear
Elk	Mule Deer
Northern Leopard Frog	

*East-west movement across Highway 40 is more important for Bighorn sheep than connectivity across I-70.

Animal-Vehicle Collisions: High

Status of Adjacent Lands: Mostly private, some county

Site Discussion: Confluence of two large drainages (Clear Creek and the West Fork) and junction with Highway 40. Likely these two drainages provided historical movement pathways for many species. Interchange and other infrastructure create a large barrier at this confluence. Clear Creek has forced meanders around highway infrastructure, reinforced by riprap banks throughout this segment

Connectivity Recommendations
Coordinate visioning and planning for this segment with visioning and planning for Highway 40. Preferred alternative is to construct an extensive span bridge and raised interchange through this section to accommodate terrestrial and aquatic passage between the two drainages and restore the flow of Clear Creek and its riparian banks to a more natural condition. Alternatively, construct new crossing structures at mileposts 231.2 (JP064 - just beyond west end of LIZ) and 231.6-231.9. Investigate using jersey barriers or other barrier structures to keep sheep away from I-70 road edge on north side (2004 LIZ recommendation).

Site-Specific Recommendations				
Loc. #	**MP**	**Site Description**	**Recommendations**	**EEO***
JP064	231.2	Clear Creek concrete box culvert. Outside of LIZ, but possible location for a larger crossing structure.	Replace with a bridge structure and restore riparian banks. Bridge should have a wide enough span to include dry pathways for terrestrial species on both sides of the creek. Install limited guide fencing to direct animals towards structure and investigate use of scent lures to attract lynx towards structure.	No

JP066	232.3	Clear Creek concrete box culvert. Structure goes under traffic lanes and eastbound on-ramp.	None. See preferred alternative.	No
n/a	231.6-231.9	No existing structure	Identify a location to install a new large arch culvert in this segment suitable for lynx, elk, deer and bear. Install limited guide fencing to direct animals towards structure and investigate use of scent lures to attract lynx towards structure.	No
n/a	Hwy 40	No existing structure	Identify a location and construct an overpass for bighorn sheep over Hwy 40 (2004 LIZ recommendation)	No

*Early Enhancement Opportunity

†Indicates wildlife monitoring conducted at site

LIZ O: Clear Creek Junction

Mileposts: 243.0 – 244.9 *Early Enhancement Opportunities in LIZ?* No
LIZ Length: 2 miles

Target Species	*Species Movement Guilds*
Elk	Very High Openness Fauna
Mule Deer	Adaptive Ungulates

Secondary Target Species

Bighorn Sheep	Canada Lynx
Mountain Lion	Preble's Jumping Mouse

Animal-Vehicle Collisions: Low to Moderately-Low

Status of Adjacent Lands: Private

Site Discussion: Highway 6/Clear Creek Canyon Interchange. Western Portion of LIZ parallels Clear Creek; eastern portion ascends Floyd Hill.

Connectivity Recommendations
Land bridge over Twin Tunnels just beyond LIZ to the west. Existing bridges over Clear Creek provide little opportunity for terrestrial passage. There is a proposal in the Final PEIS to tunnel eastbound lanes from milepost 243.5 to 245.0 to remove the sharp curve at the bottom of Floyd Hill; Westbound lanes would continue on the current alignment. This tunneling option may offer the opportunity to minimize the roadway footprint through this segment.

Site-Specific Recommendations				
Loc. #	**MP**	**Site Description**	**Recommendations**	**EEO***
JP131	243.0	Divided bridge at Central City exit with additional bridges to north (exit ramp and local road). Extensive riprap under all bridges. Dirt path with 2m clearance under hwy bridges.	Open up terrestrial pathway under highway bridges (particularly on west side of creek) and restore natural stream banks. Re-design exit ramp to provide greater clearance under bridge. Facilitate at-grade crossing over local road until that bridge can also be replaced with a larger structure encompassing riparian banks and providing dry terrestrial pathways.	No
JP017	244.2	Divided bridge with concrete support walls at Hwy 6 junction. Spans Clear Creek and bike path.	Open up north side of eastbound structure by replacing walls with pillar supports. Open up and restore riparian banks on both sides of the creek (including low cover for Preble's jumping mouse). Cliffs act as natural funnel towards structure.	No

JP043†	244.9	Fill slope; Hwy 40 frontage road parallel and below interstate to north/east	Construct bridge wildlife crossing - possibly also under Hwy 40. Relocate dirt pull-out to reduce roadway footprint at this location and to discourage human activity. Install limited guide fencing.	No

*Early Enhancement Opportunity

†Indicates wildlife monitoring conducted at site

ALIVE IMPLEMENTATION MATRIX

WILDLIFE CONNECTIVITY AND HABITAT

Objective: To increase the permeability of the I-70 Corridor to terrestrial and aquatic species, including the development of management strategies that will result in the long-term protection and restoration of wildlife linkage areas that intersect the I-70 Corridor, improve habitat connectivity, and preserve essential ecosystem components. (MOU Purpose and Intent).

Corridor Planning	Project Development	Project Design	Project Construction	Operations, Maintenance, and Monitoring
Inputs • Wildlife data • Land use information (incl. local use, USFS management plans, BLM, etc.) • Existing LIZ and Ecological information and recommendations	Inputs • Target species movements and habitats • Wildlife guidelines and BMPs (I-70 Guidelines for Enhancing Wildlife Permeability) • Avoidance and mitigation strategies (I-70 Connectivity Recommendations) • Existing recovery efforts (USFWS/CDOW) • Coordination with CDOW, USFWS, USFS, BLM, local governments, other stakeholders)	Inputs • Species specific needs and compatible project designs • Terms and conditions from Biological Opinion, if applicable	Inputs • Terms and conditions from Biological Opinion, if applicable • New species & habitat data since PS&E relative to all target species (or new target species) – NEPA reevaluation	Inputs • Implementation and Monitoring Plan • Terms and conditions from Biological Opinion, if applicable
Considerations • What opportunities exist to improve, protect or restore permeability and habitat components? • How have wildlife habitat and populations changed since the original or last updated analyses?	Considerations • Are these permeability concerns outside of identified LIZs? • Where are there existing barriers to wildlife movement? • What opportunities exist to improve, protect or restore permeability and habitat components?	Considerations • Will project designs improve or restore habitat and permeability? • Will project designs minimize impacts to habitat and permeability during construction?	Considerations • Are there unforeseen issues affecting habitat & permeability during construction? • Are there changes to the construction timeline that could affect habitat & permeability?	Considerations • Are the mitigations successful relative to the permeability goals set during corridor planning and project development? – What could be done differently?

ALIVE IMPLEMENTATION MATRIX

WILDLIFE CONNECTIVITY AND HABITAT

Objective: To increase the permeability of the I-70 Corridor to terrestrial and aquatic species, including the development of management strategies that will result in the long-term protection and restoration of wildlife linkage areas that intersect the I-70 Corridor, improve habitat connectivity, and preserve essential ecosystem components. (MOU Purpose and Intent).

Corridor Planning	Project Development	Project Design	Project Construction	Operations, Maintenance, and Monitoring
Considerations (cont'd) • What types of changes in wildlife habitat, populations or movements might occur in the reasonably foreseeable future?	Considerations (cont'd) • How have wildlife habitat and populations changed since the original or last updated analyses? • What types of changes in wildlife habitat, populations or movements might occur in the reasonably foreseeable future? • Do opportunities exist to enhance recovery efforts (e.g., approved Recovery Plans for ESA-listed species and State analog)? • Does the target species list include ESA-listed T&E species, species of state economic importance, USFS and BLM sensitive species, USFS MIS, & state spp. of concern> • Are there potentially conflicting mitigation/ BMPs actions (crosswalk proposed mitigations)	Considerations (cont'd) • Will project designs minimize impacts to habitat and permeability during operations and maintenance? • Are there potentially conflicting mitigation/BMPs actions (crosswalk proposed mitigations)		Considerations (cont'd) – How could a structure be built better, cheaper next time?

ALIVE IMPLEMENTATION MATRIX

WILDLIFE CONNECTIVITY AND HABITAT

Objective: To increase the permeability of the I-70 Corridor to terrestrial and aquatic species, including the development of management strategies that will result in the long-term protection and restoration of wildlife linkage areas that intersect the I-70 Corridor, improve habitat connectivity, and preserve essential ecosystem components. (MOU Purpose and Intent).

Corridor Planning	Project Development	Project Design	Project Construction	Operations, Maintenance, and Monitoring
Outcomes and Products • Identify measurable permeability goals for the corridor • Avoidance strategies Mitigation strategies (I-70 Connectivity Recommendations) • Revised or refined LIZ information for that corridor segment (LIZs-2011) • Identify partnership and acquisition or easement opportunities (permanent protection opportunities for adjacent habitat)	Outcomes and Products • Biological Evaluation (USFS sensitive spp.), Biological Assessment (USFS), Biological Opinion (USFWS), Biological Report (USFS) – Identify project-specific mitigation strategies relative to all target species – Establish commitment to monitoring	Outcomes and Products • Final Plan Specifications and Estimates (i.e., final designs) including specific mitigation measures • Monitoring plan, estimates and identified funding for monitoring & ongoing maintenance	Outcomes and Products • Mitigation modifications	Outcomes and Products • Monitoring results • Lessons learned

INFORMATION NEEDS AND UPDATES

Objective: Identify and acquire information needed to inform decision-making and outcomes at each life cycle phase.

• Changing and shifting habitats and wildlife populations • Ongoing LIZ revisions	• General and species-specific BMPs	• Species-specific and site-specific monitoring needs-what protocols should be implemented to evaluate the functionality of mitigation measures?	• Surveys prior to implementation	• Are there new or improved monitoring techniques which could provide greater efficiency and effectiveness in monitoring?

Twin Tunnels EA and Frontage Road Project
ALIVE Issues Work Plan

Wildlife Connectivity and Habitat			
Issue	***How it will be addressed/ Recommendation***	***Information and data needs***	***CDOT Lead***
Barrier separation along Clear Creek Greenway	Identify location for breaks and consider various designs and types	Drainage locations	David Singer
Need to provide pathway for deer and elk under Hidden Valley bridge over Clear Creek	Will include deer passage under bridge and improve bench in project design		
Sheep get stuck in the fence along north side of I-70 at the west portal of the westbound tunnel	Minimal fencing. If needed, must meet CPW guidelines	Identify existing fence ownership	Jim Eussen
Fencing needed on south side of the tunnel during I-70 construction to redirect wildlife downstream away from the detour	Temporary fencing will be installed on the north side of old US 40 from the west portal to the doghouse bridge. Temporary lighting will be used during detour.		

Wildlife Connectivity and Habitat			
Issue	***How it will be addressed/ Recommendation***	***Information and data needs***	***CDOT Lead***
Consider opportunities to accommodate wildlife in culvert west of the Twin Tunnels near Clear Creek Rafting	Maintain access on the south end to allow animals to move up and down Clear Creek. Improve drop from outlet.	Set cameras to inventory use.	Jim Eussen
Aquatic and fish permeability and passage	Develop design with CPW and USACE for permitting.	CPW to conduct fish survey in the fall of 2012 as baseline.	Jim Eussen
Limit lighting on the frontage road and at wildlife crossings	Directional light at Hidden Valley bridge. No permanent lighting on the frontage road.	Confirm frontage road lighting.	David Singer
Coordinate between the two projects to enhance connectivity	Ongoing		David Singer
Information Needs and Updates			
Issue	***How it will be addressed***	***Information and data needs***	***CDOT Lead***
Need project specific and small species data not included in the recent I-70 inventory	Add to CSS inventory on website	- CPW aquatic survey - Camera inventory in culvert - Landowner observation documentation - Migratory bird survey	Janet Gerak/David Singer

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FINAL/REV **Meeting Minutes**

Subject:	ALIVE Meeting #2
Client:	CDOT Region 1
Project:	I-70 Peak Period Shoulder Lane
Project No:	215164
Meeting Date:	December 3, 2013
Meeting Location:	CDOT Golden
Notes by:	Ally Kranz

ATTENDEES:

HDR:	Gina McAfee, Sandy Beazley, Ally Kranz, Sirena Brownlee, Tammy Heffron
CDOT:	David Singer, Francesca Tordonato, Jeff Peterson
USFS:	Doreen Sumerlin
USFWS:	Alison Michael
THK:	Kevin Shanks
CH2M Hill:	Katy Reagan
Atkins:	Allan Brown
PB:	Jason Longsdorf
Clear Creek County:	Jo Ann Sorensen

DISTRIBUTION: Attendees, ALIVE members, Project File

SUMMARY OF DISCUSSION:

PPSL Project Overview

1. Gina mentioned SH 103 Bridge to Mt. Evans will be replaced at Idaho Springs, and east Idaho Springs bridge will most likely be replaced. There will be 10 retaining walls and more signs. HDR is working with stakeholders to determine signage. Almost all on-ramps and a couple of deceleration ramps will be widened to 4 feet to 8 feet.
2. There will be improvements to Water Wheel Park due to the shifting of I-70 several feet toward Water Wheel Park to accommodate the PPSL. There are also numerous water quality treatment measures that will be put in place along with the improvements.

AVC Hotspots (Accident data provided by CDOT and Colorado State Patrol)

1. Empire Junction
   - **a. Issues raised:**
     - i. Area slated for major improvements later, so limited in what can be done now.
   - **b. Possible solutions:**
     - i. Box culvert below interstate can be raised on one side so it's dry year-round.

ii. Benches on either side of the box culvert.

iii. Use fencing on south side of the highway to divert animals to area with less traffic.

iv. Existing right-of-way fence on south side of highway follows right-of-way line, and is a low, four-strand fence. Could be replaced with a two-meter-high wildlife fencing extended east and west to keep animals from crossing at interchange; although, without fencing on the north side of the highway too there is the risk of wildlife moving north to south being "trapped" in the right-of-way.

2. Mileposts 233 to 234 (AVCs 12-14-10 about a half mile from one another)

a. Issues raised:

i. Plan to shift MP 234.2 into median until MP 235, median is currently 22 feet wide, 16 to 20 feet would still be available for refuge area

b. Possible solutions:

i. No solutions were identified in this location. Median jumps are not an option as the existing median is W beam and/or cable median, which ungulates can jump over.

3. Fall River Road

a. Issues raised:

i. Two gulches coming down leading animals to road (9 AVCs in last 12 years).

ii. Clear Creek is on one side, steep topography on the other—no obvious infrastructure solution.

iii. Cannot terrace the median (floodplain issue).

iv. Superfund site near this location.

v. New walls interfere with drainage and create an additional barrier to wildlife movement.

b. Possible solutions:

i. No solutions were identified in this location. Median jumps are not an option as the existing median is W beam and/or cable median, which ungulates can jump over. Fencing can be to influence animals to cross at a safer area, maybe 2/10 mile east; although, the preference is to use fencing to guide wildlife over or under crossings, which do not exist in this area.

ii. Consider low wall (like curb) between retaining walls, leaving a gap for wildlife to pass through, with drainage being conveyed via curb and gutter.

c. Agreements reached:

i. Animals should not be moved via fencing unless there is a viable safe crossing.

4. West end of Idaho Springs

   a. Issues raised:

      i. Large noise barrier on the north side of I-70 trapping animals on road.

      ii. Stanley Road under the highway has a lot of concrete, animals unlikely to use.

   b. Possible solutions:

      i. Retrofit wall on west end of town for easier animal crossing.

      ii. Retrofit median to add median jumps just west of this location, where the noise barrier terminates.

5. Soda Creek Road

   a. Issues raised:

      i. Area includes 5-foot to 6-foot chain-link fence, as well as a lower woven wire fence. There is evidence of deer movement in this area.

   b. Possible solutions:

      i. Opportunity to remove existing fencing and replace with a wildlife friendly fence where road passes beneath highway (fence is in CDOT right-of-way).

   c. Agreements reached:

      i. Game trails indicate definite animal movement in area.

      ii. Removing fencing is good low-cost solution.

      iii. Project team will coordinate with City and County officials on the fencing, including ownership and reasons for its original installation.

6. Lynx

   a. Summary of findings:

      i. Lynx were not found to be involved in AVCs in project area.

      ii. Lynx will not be greatly impacted with retaining walls, as most of the walls occur at elevations lower than those inhabited by lynx.

      iii. Proposed action may affect but not likely to adversely affect lynx.

7. Empire Junction Wetland Area

   a. Issues raised:

      i. Knowing that a bigger project is coming through it is necessary to be sensitive to future project and current budget.

ii. There have been a couple bears, moose, and sheep recently hit in this area.

iii. Limited opportunity to improve animal crossings.

iv. Vegetation in wetland is very mature, and impairs the line of sight.

b. Possible solutions:

i. Remove or trim vegetation, like willows, to improve safety of merging at Empire Junction.

ii. Add vegetation that is beneficial to wildlife.

iii. Place animal crossing signs in area to alert drivers.

c. Agreements reached:

i. Trimming the vegetation would be cost-prohibitive and maintenance intensive because it would need to be done repeatedly.

ii. Do not draw animals to wetland by making it more attractive to them; therefore, leave wetland as is because of its uniqueness.

iii. Animal crossing signs could be installed, but ultimately are not effective in the long term.

Action Items

1. Finalize the median jump plan: how many locations, length of W-beam area, can it be lengthened without compromising safety, etc.?
    a. This is in process and will be included for discussion at the 12/16/13 Tech Team meeting. More information to follow.
2. Investigate breaking up long walls if possible—maybe through use of curbs for drainage reasons.
    a. This concept is being reviewed by the project team. More information to follow.
3. Fencing at Soda Creek: Coordinate with county, whose fence is it, why is it there.
    a. This is in process and will be included for discussion at the 12/16/13 Tech Team meeting. More information to follow.
4. US 40 (Empire Junction) field trip with CPW to assess fencing options.
    a. Francesca is coordinating with CPW to determine potential dates.
5. No future meetings necessary; new developments will be communicated through email.

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Meeting Minutes

Subject:	SWEEP Meeting #2
Client:	CDOT Region 1
Project:	I-70 Peak Period Shoulder Lane
Project No:	215164
Meeting Date:	December 5, 2013
Meeting Location:	CDOT Golden
Notes by:	Sandy Beazley and Britton Marchese

ATTENDEES:

HDR:	Sandy Beazley, Gina McAfee, Tammy Heffron, Britton Marchese
CDOT:	Holly Huyck, David Singer, Francesca Tordonato, Samer Alhaj
EPA:	Sarah Fowler
THK:	Kevin Shanks
Atkins:	Allan Brown
CH2M Hill:	Mandy Whorton
PB:	Jason Longsdorf
Matrix Design:	Robert Krehbiehl
Clear Creek County:	Trent Hyatt, Jo Ann Sorenson

DISTRIBUTION: Attendees, SWEEP members, Project File

SUMMARY OF DISCUSSION:

1. Introductions
2. PPSL Project Overview
   a. Gina provided an overview of the project.
   b. Sarah asked what the cross section is—it was described as primarily a signage and striping effort, with minimal widening throughout the corridor. The number of entry points is currently unknown.
3. Wetland impacts
   a. Sandy discussed wetland impacts. Five wetlands were delineated; others were conservatively assumed to be wetlands based upon a windshield survey (because they were inaccessible for safety reasons during flooding).
   b. Potential impacts are limited to wetlands #1 and #3. Impacts at wetland #1 will likely be avoided entirely.
   c. Wetland impacts to #3 would result from improvements to Water Wheel Park. This will be mitigated by creating additional wetlands, potentially resulting in more wetland acreage than currently present.
   d. **Once wetland impacts have been determined, this information will be communicated to the SWEEP group electronically**.

4. Floodplain impacts
    a. Robert noted the success of the team in avoiding floodplain impacts. The only adverse impact is adjacent to the retaining wall at the upstream side of SH 103. The crib wall is being scoured and adding sediment to the Creek. The wall will be refaced—expanding the width into the creek. This will include stabilizing the creek edge in front of the wall, leaving large boulders in place. Material will be removed and the bed lowered to result in a net zero effect to floodplains. Coordination with Trent (CCC) has occurred to discuss permitting. Since there are no impacts a CLOMR is not needed but a LOMR will be necessary. Samer clarified that there will be no adverse effect.
    b. It is not currently known how much the wall will be lengthened to the west; additional analyses will be conducted to ensure that the tailings to the west are avoided. CDPHE directed that tailings be reburied or taken to a depository.
    c. Review borings taken to determine if they were taken far enough west (Brian Partington with Pinyon has that data). This has been completed, see Action Items below.
    d. Coordination with Rena (USACE) has occurred, resulting in the stacking of the NWP permits (#3 and #42), one for maintenance and one for recreation.
    e. Sarah Fowler had questions about the permitting process and will follow up with the Corps.
    f. Coordination has not begun with the rafting community, but is forthcoming. The team is trying to schedule a meeting with rafting representatives in early January.
5. Riparian vegetation impacts
    a. Riparian impacts are currently calculated to be 0.5 acre. This number is conservative as it is based on a 10-foot buffer, including the west portion of the study area where improvements will be limited to signage only.
    b. If impacts to riparian vegetation change, it will be communicated to the group.
6. Sarah Fowler had questions about the NEPA approval process—Gina noted that there will be Technical Memos developed to support a CATEX and FHWA approval is expected in March.
7. CPW fish data
    a. CPW conducted limited surveys: brown trout are present throughout Clear Creek, but there are no redds upstream or downstream of SH 103. There will be no impacts to spawning habitat.
    b. A CPW macro invertebrate survey is in process. The project team will incorporate this data into the analysis if it is received in time.
8. Proposed permanent BMPs
    a. BMPs will be developed.
9. Water Quality treatment during construction (Robert)
    a. ~50 acres of existing pavement in EB
    b. Project will add ~1.5 acres in EB throughout the corridor (a 3% increase)

c. The goal is to ensure that WQ is not made worse, meaning that we must capture at least 3% of the runoff, but we are able to capture and treat 20% to 25% of runoff with the proposed BMPs.

d. Eight sediment basins are proposed (treats 15% of the runoff)

e. Nine inlets are proposed, and typically integrated with the retaining walls (inliets treats 10% of the runoff).

f. Curb and gutter will be implemented, ~4500 feet, to direct water to water treatment structures.

g. Recommendations from SCAP document will be implemented, where feasible.

h. Will water quality improvements be developed at pull outs to catch spills? This conversation has not yet occurred.

i. Jo Ann asked who owns the port-of-entry parcel at MP 234. Ownership will be confirmed and this parcel will be used for water quality if possible. Date of right-of-way surveys needs to be confirmed.

j. The table below summarizes water equality treatment in the study area.

EB I-70 WQ Treatment

Current Impervious Roadway Area	54.1 acres
EB I-70 PPSL Added Impervious Area	1.5 acres
Proposed Impervious Area	55.6 acres
Proposed Treatment Area	14.0 acres
Proposed Capture—8 Sediment Basins	7.7 acres
Proposed Capture—9 Inlet Basins	6.3 acres
Required C&G	4524 linear feet
Proposed Capture and Treatment Rate	25%

Action Items

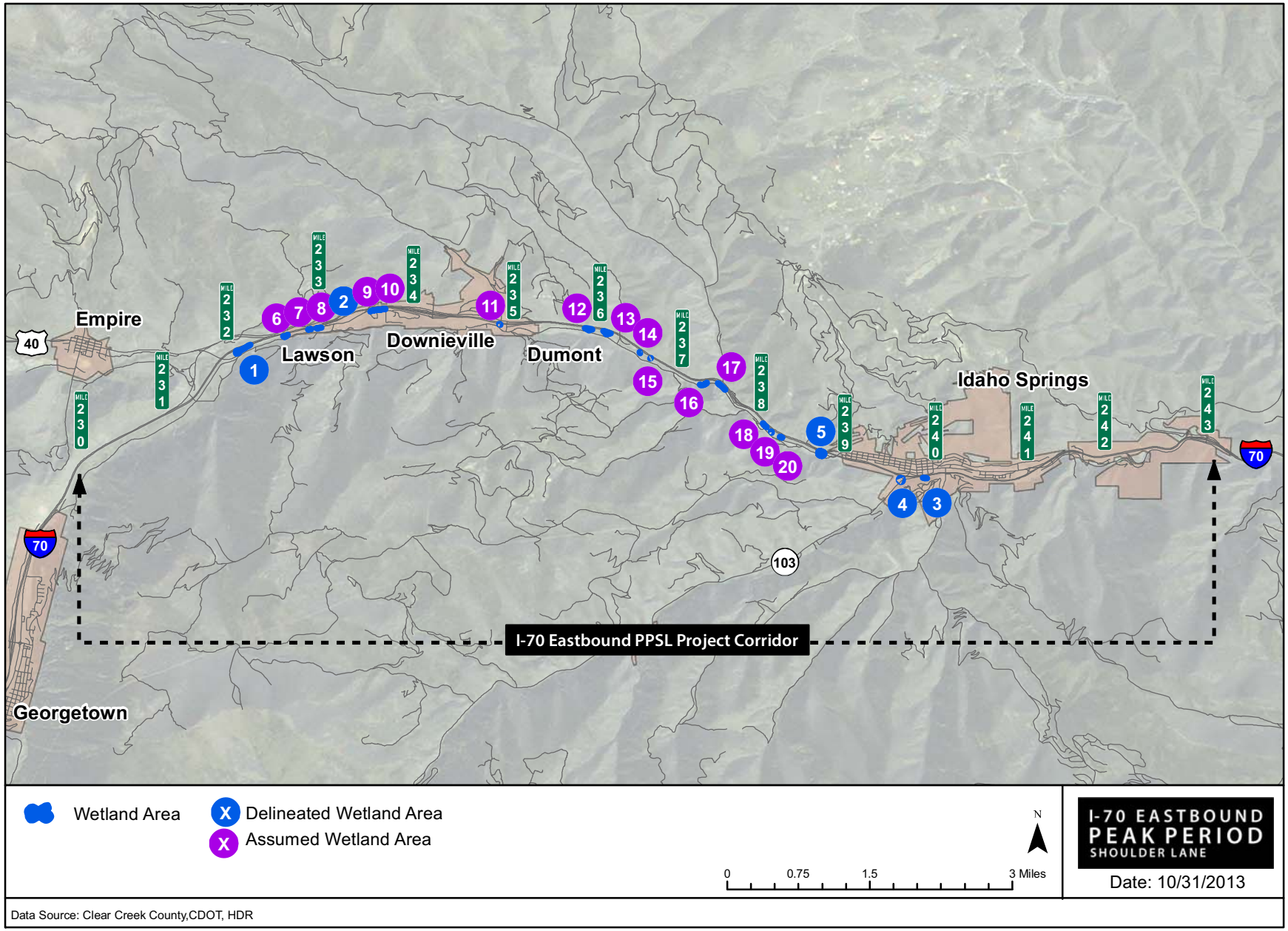
1. Share the Water Wheel park design with the SWEEP committee upon availability.
2. Provide updates should wetland impacts change.
3. Provide updates as riparian impacts are refined.
   a. In process, new calculations likely distributed week of 12/16/14.
4. Provide information regarding the construction techniques of the retaining wall upstream of SH 103.
5. Arrange a meeting with rafting interests.
   a. In process, targeting a meeting the week of 1/16/14/

6. Determine the length of the retaining wall and proximity to Big 5 tailings and ensure the Yeh borings included areas of new wall construction.
    a. Per Brian Partington, another boring beyond the one completed adjacent to the existing wall is unnecessary. CDPHE has given the project permission to simply bury any mine wastes that are found beneath the road or behind the walls. Therefore, the most practical method of dealing with it is to notify the contractor, and have him address with the forthcoming Materials Management Plan.
7. Include a discussion of right-of-way at the port-of-entry at the next Tech Team prep meeting. Who owns it? Can CDOT obtain an easement? Date of right-of-way surveys needs to be confirmed.
    a. In process, follow up discussions with the Clear Creek County to occur 12/16/13.

AGENDA

SWEEP ISSUES TASK FORCE MEETING #2
December 5, 2013
8:30 a.m. to 10:30 a.m.
FHWA Trail Ridge and Central Conf. Rooms 12300 West Dakota Avenue, Suite 180, Lakewood

1. **Introductions**
2. **PPSL Project Overview**
    a. Review of likely wetland impacts
    b. Review of likely floodplain impacts
    c. Review of riparian vegetation impacts
    d. CPW fish data
    e. Review of proposed permanent BMPs
    f. Water quality treatment during construction
3. **Westbound Twin Tunnels Project**
    a. Description of proposed action
    b. Schedule
    c. SCAP improvements
    d. Delay in trailhead improvements and stream restoration
4. **Next Steps**


Empire
Lawson
Downieville
Dumont
Idaho Springs
Georgetown
40
70
103
I-70 Eastbound PPSL Project Corridor
Wetland Area
Delineated Wetland Area
Assumed Wetland Area
N
0
0.75
1.5
3 Miles
I-70 EASTBOUND
PEAK PERIOD
SHOULDER LANE
Date: 10/31/2013
Data Source: Clear Creek County,CDOT, HDR

MILE 230

I 70 (WB)
I 70 (EB)

Alvarado Rd

MILE 231

I 70 (WB)
I 70 (EB)

CDOT Right-of-Way

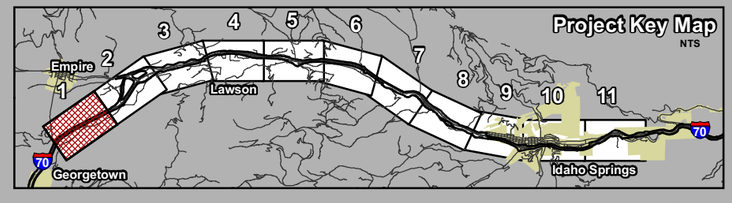
Ordinary High Water Mark

Riparian Area

Delineated Wetland Area

Assumed Wetland Area

Source: Clear Creek County, CDOT & HDR



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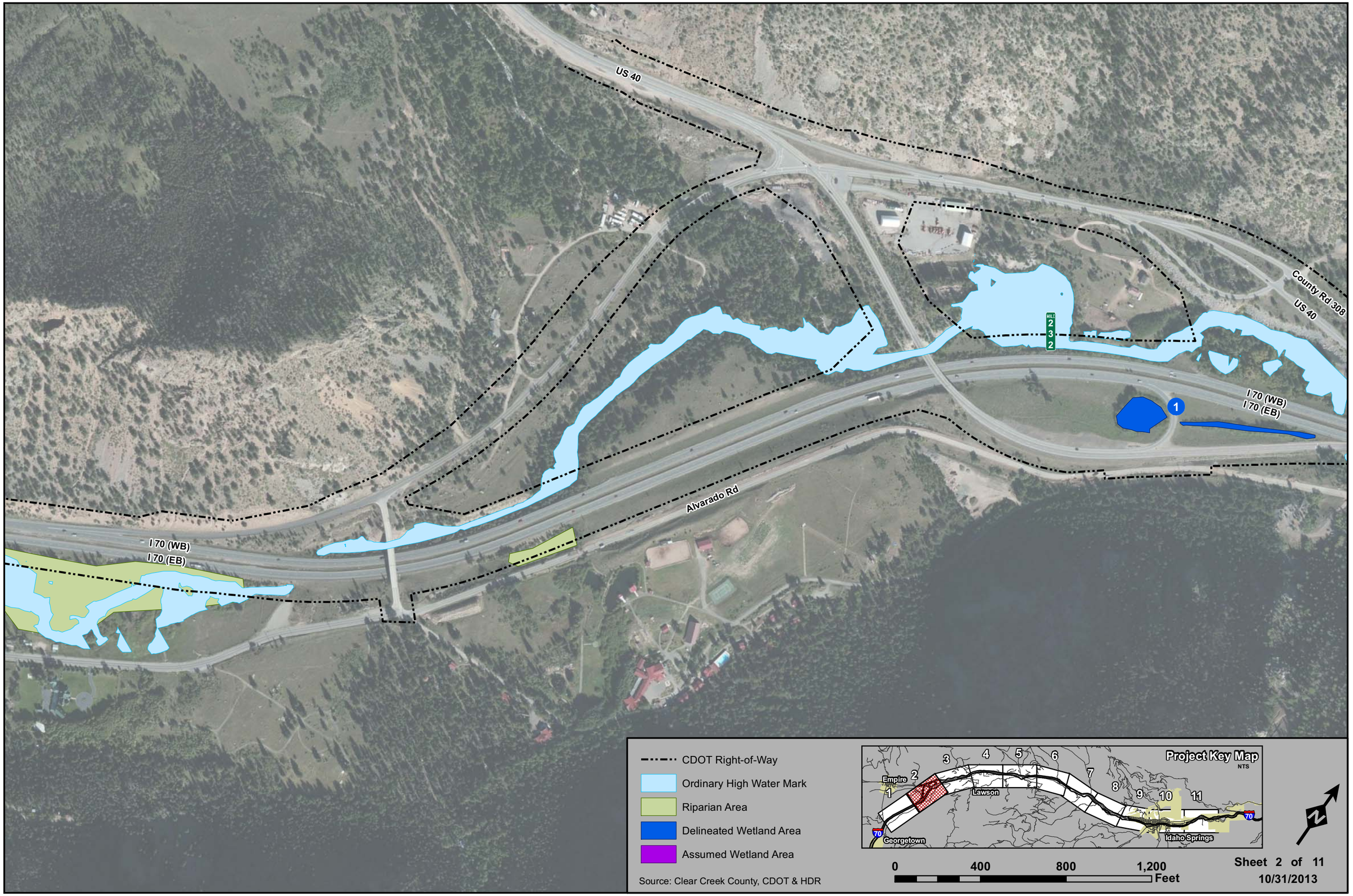

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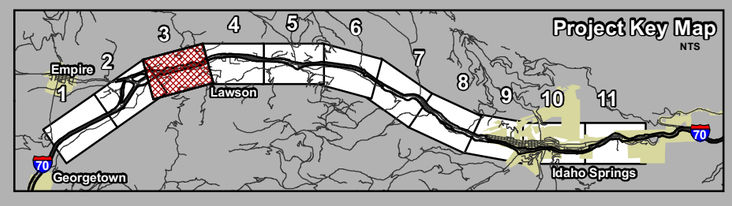
County Rd 308
US 40
I 70 (WB)
I 70 (EB)
Alvarado Rd
I 70 (WB)
I 70 (EB)
County Rd 308
MILE 233
1
2
6
7
8

CDOT Right-of-Way
Ordinary High Water Mark
Riparian Area
Delineated Wetland Area
Assumed Wetland Area

Source: Clear Creek County, CDOT & HDR



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Mountain St
County Rd 308
MILE 2 3 4
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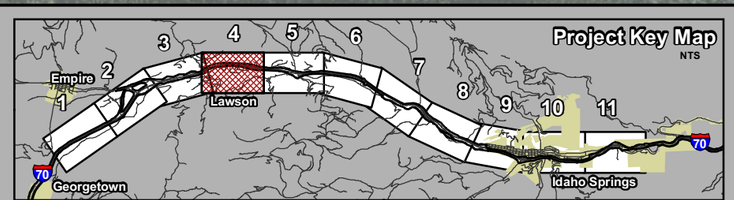
9
Silver Lakes Dr
Capital Rd
Silver Lakes Dr
I 70 (WB)
I 70 (EB)
I 70 (WB)
I 70 (EB)
County Rd 308

CDOT Right-of-Way
Ordinary High Water Mark
Riparian Area
Delineated Wetland Area
Assumed Wetland Area

Source: Clear Creek County, CDOT & HDR



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Sheet 4 of 11
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Dumont Ln

Mill Creek Rd

I 70 (WB)
I 70 (EB)

MILE 235

11

West Dumont Rd

I 70 (WB)
I 70 (EB)

Stanley Rd

CDOT Right-of-Way

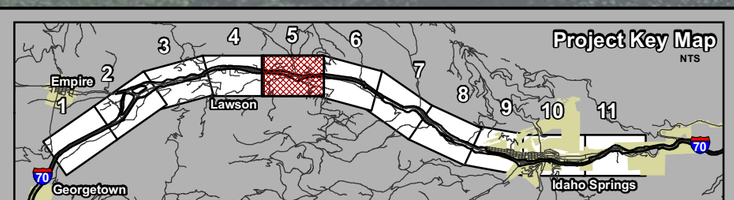
Ordinary High Water Mark

Riparian Area

Delineated Wetland Area

Assumed Wetland Area

Source: Clear Creek County, CDOT & HDR



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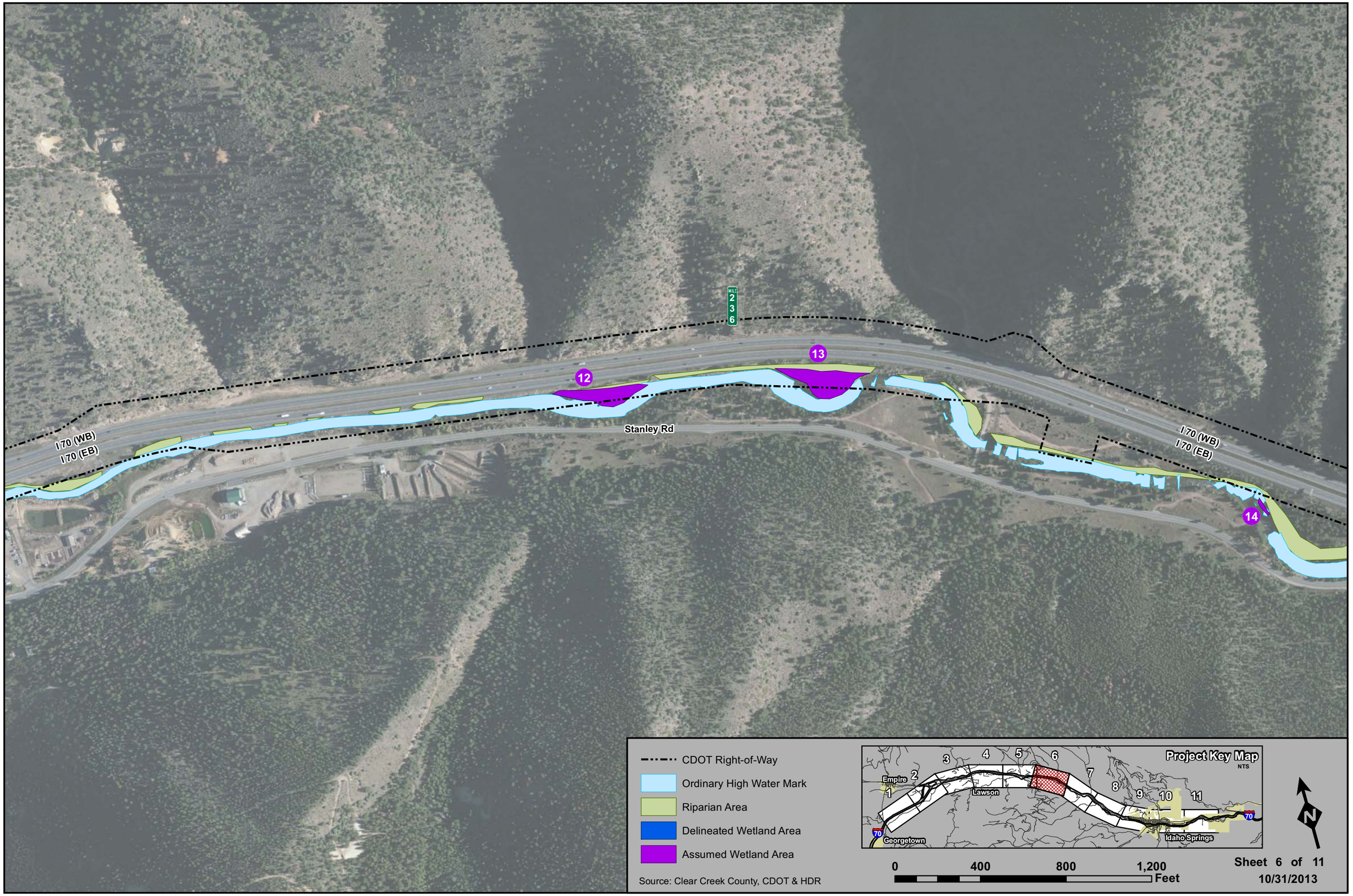

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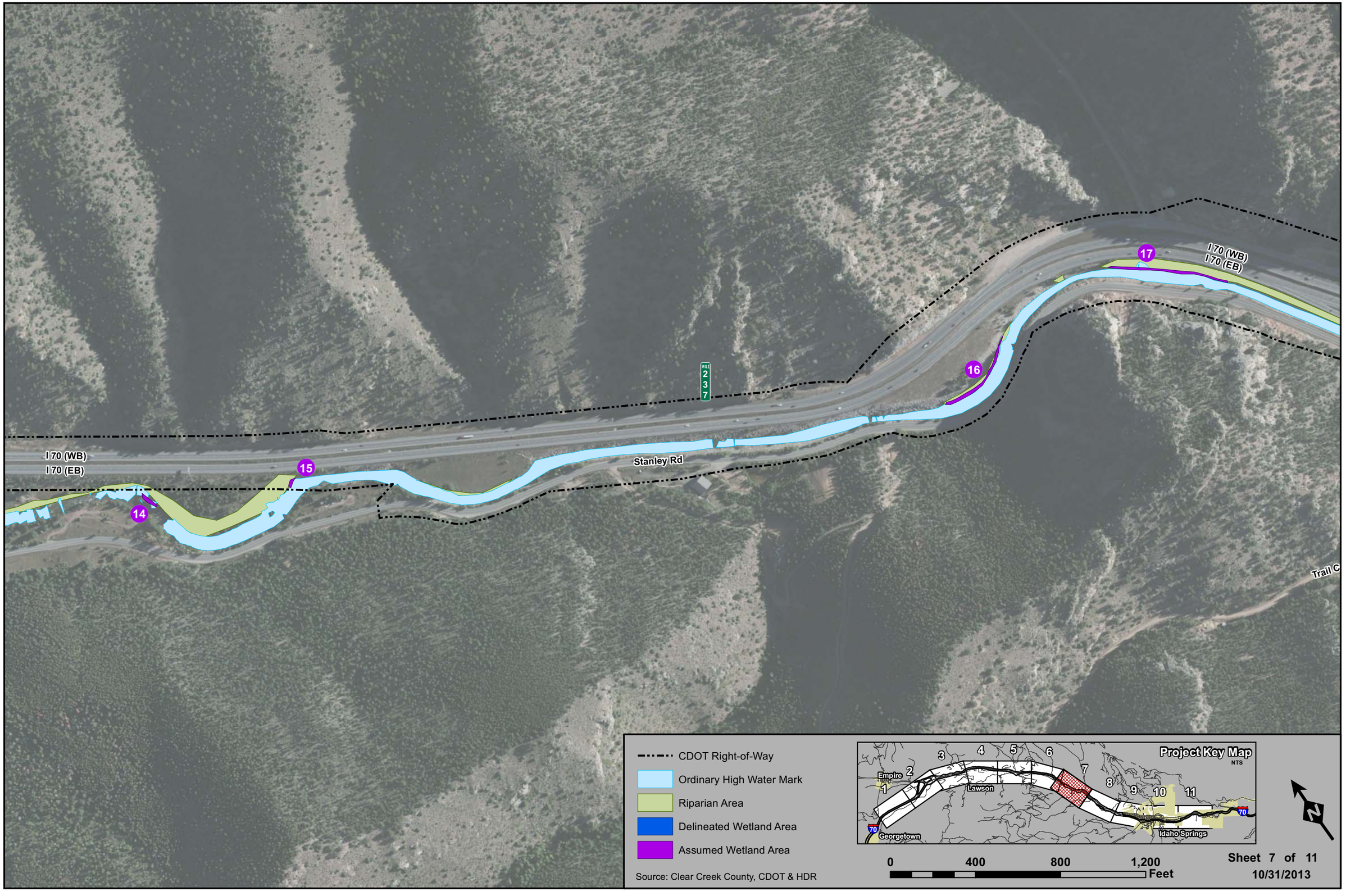
17
16
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I 70 (WB)
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I 70 (WB)
I 70 (EB)
Stanley Rd
MILE
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Trail C
CDOT Right-of-Way
Ordinary High Water Mark
Riparian Area
Delineated Wetland Area
Assumed Wetland Area
Source: Clear Creek County, CDOT & HDR
Project Key Map
NTS
Empire
Lawson
Georgetown
Idaho Springs
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Feet
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Sheet 7 of 11
10/31/2013
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I 70 (WB)
I 70 (EB)

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19

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WILD
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I 70 (WB)
I 70 (EB)

Stanley Rd

Trail Creek Rd

CDOT Right-of-Way

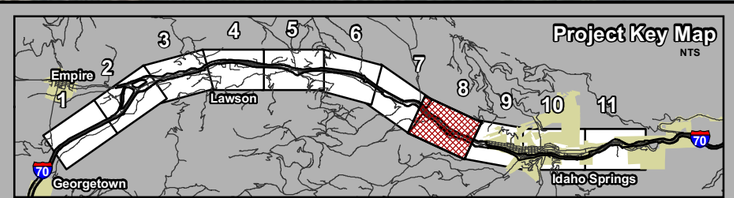
Ordinary High Water Mark

Riparian Area

Delineated Wetland Area

Assumed Wetland Area

Source: Clear Creek County, CDOT & HDR



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I 70 (WB)
I 70 (EB)

Stanley Rd

5

1st Ave
2nd Ave
3rd Ave
4th Ave
5th Ave
6th Ave
7th Ave
8th Ave
9th Ave
10th Ave
11th Ave
12th Ave
13th Ave

Colorado Blvd
Center Alley
High St
Virginia St
Miner St
Idaho St

MILE 2 3 9

4

I 70 (WB)
I 70 (EB)

CDOT Right-of-Way
Ordinary High Water Mark
Riparian Area
Delineated Wetland Area
Assumed Wetland Area

Source: Clear Creek County, CDOT & HDR

Project Key Map
NTS

1 Empire
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Lawson
Georgetown
Idaho Springs
70

N

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Feet

Sheet 9 of 11
10/31/2013

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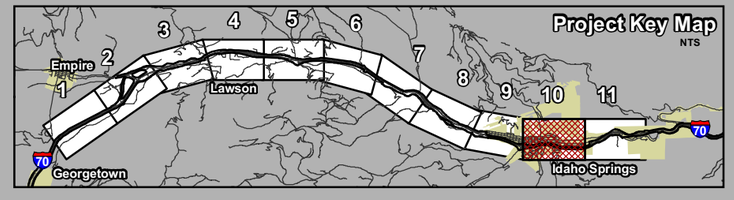
Virginia Canyon Rd
Wall St
Virginia St
Riverside Dr
22nd Ave
23rd Ave
Colorado Blvd
Miner St
Idaho St
13th Ave
Center Alley
15th Ave
16th Ave
17th Ave
21st Ave
24th Ave
25th Ave
27th Pl
Lane C
Lane D
Spruce Ln
Gilson Ave
I 70 (WB)
I 70 (EB)
Soda Creek Rd
MILE 240
3

CDOT Right-of-Way
Ordinary High Water Mark
Riparian Area
Delineated Wetland Area
Assumed Wetland Area

Source: Clear Creek County, CDOT & HDR



N

0 400 800 1,200 Feet

Sheet 10 of 11
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Document Path: U:\Projects\215164_CDOT_R1TO1_I70 PPSL\map_docs\mxd\mapbook_11x17L_1in400ft_Wetlands.mxd

Riverside Dr

Gilson Ave

Colorado Blvd

MILE 241

MILE 242

I 70 (WB)
I 70 (EB)

I 70 (WB)
I 70 (EB)

CDOT Right-of-Way

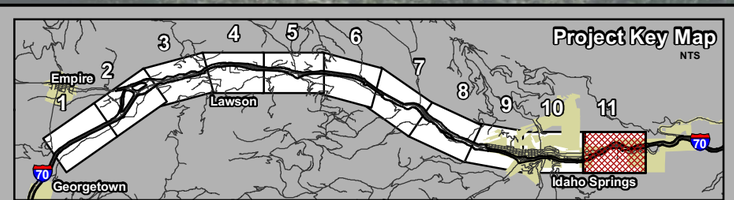
Ordinary High Water Mark

Riparian Area

Delineated Wetland Area

Assumed Wetland Area

Source: Clear Creek County, CDOT & HDR



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Sheet 11 of 11

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PPSL: Floodplain Impacts, East of SH 103

PPSL: Floodplain Impacts, West of SH 103