
CDOT

WB I-70 Peak Period Shoulder Lane

# WETLANDS AND OTHER WATERS OF THE U.S. TECHNICAL REPORT

October 26, 2018

Categorical Exclusion

# WETLANDS AND OTHER WATERS OF THE U.S. TECHNICAL REPORT

# WESTBOUND I-70
# PEAK PERIOD SHOULDER LANE

*Prepared for:*

*Prepared by:*

October 26, 2018

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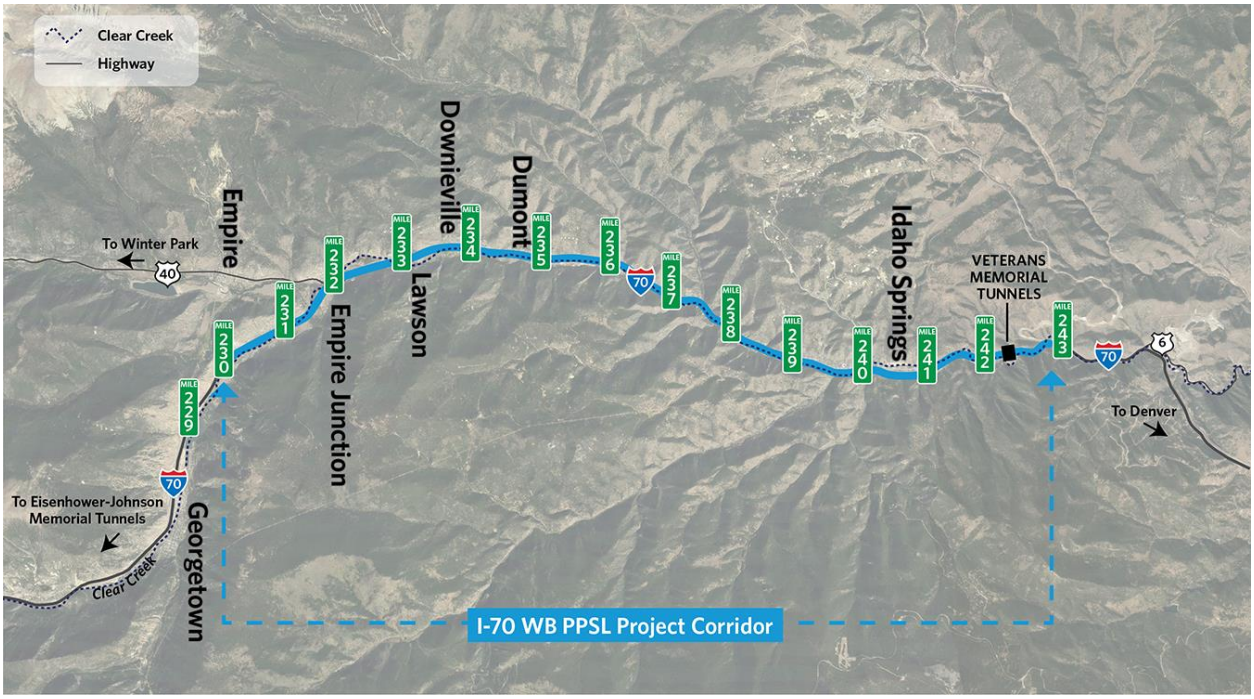
# Acronyms and Abbreviations

| | |
|---|---|
| ALIVE | A Landscape Level Inventory of Valued Ecosystem Components |
| CDOT | Colorado Department of Transportation |
| CDPHE | Colorado Department of Public Health and Environment |
| CFR | Code of Federal Regulations |
| CR | County Road |
| CSS | Context Sensitive Solutions |
| CWA | Clean Water Act |
| EA | Environmental Assessment |
| EB | Eastbound |
| EO | Executive Order |
| FAC | Facultative |
| FAC-W | Facultative Wetland |
| FHWA | Federal Highway Administration |
| HDR | HDR, Inc. |
| I-70 | Interstate 70 |
| LRR | Land Resource Region |
| MP | Milepost |
| NEPA | National Environmental Policy Act |
| NHD | National Hydrology Dataset |
| NWI | National Wetlands Inventory |
| OBL | Obligative Wetland |
| OHWM | ordinary high water mark |
| PEIS | Programmatic Environmental Impact Statement |
| PLT | Project Leadership Team |
| PPSL | Peak Period Shoulder Lane |
| ROD | Record of Decision |
| SH | State Highway |
| SWEEP | Stream and Wetland Ecological Enhancement Program |
| TT | Technical Team |
| U.S. | United States |
| USACE | U.S. Army Corps of Engineers |
| USEPA | U.S. Environmental Protection Agency |
| WB | Westbound |
| WUS | waters of the United States |

# Section 1. Purpose of the Report

The Federal Highway Administration (FHWA), in cooperation with the Colorado Department of Transportation (CDOT), is preparing a Categorical Exclusion for proposed changes to the westbound (WB) lanes of Interstate 70 (I-70) between approximately milepost (MP) 230 and MP 243, in Clear Creek County, Colorado (Proposed Action; Figure 1). The Proposed Action includes the addition of a 12-mile tolled Peak Period Shoulder Lane (PPSL) between the US Highway 40 (US 40)/I-70 interchange and east Idaho Springs in the WB direction and improvements to the State Highway (SH) 103 interchange. This Proposed Action improves operations and travel time reliability in the WB direction of I-70 in the study area. Additionally, the improvements are consistent with the *I-70 Mountain Corridor Programmatic Environmental Impact Statement* (PEIS; CDOT, 2011), PEIS *Record of Decision* (ROD; FHWA, 2011), *I-70 Mountain Corridor Context Sensitive Solutions* (CSS; CDOT, 2009) 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.

**Figure 1. Project Corridor**




Source: HDR 2017.

This document discusses the regulatory setting and describes the affected environment and the impacts of the Proposed Action on wetlands and other waters of the U.S. (WUS) within the identified study area. This document also identifies mitigation measures, including applicable measures identified in the I-70 Mountain Corridor PEIS, which reduce impacts during construction and operation.

# Section 2. Summary of Wetlands and Other Waters of the U.S. from Previous National Environmental Policy Act Analyses

## 2.1 How were Wetlands and Other Waters of the U.S. Treated in the I-70 Mountain Corridor PEIS (Tier 1)?

During the PEIS Tier 1 phase, wetlands and other WUS were delineated based on desktop resources (e.g., aerial photography), followed by field verification in randomly selected locations. Delineated boundaries for wetlands and other WUS were used to assess impacts to features by project alternatives, including the preferred alternative.

The FHWA and CDOT prepared the I-70 Mountain Corridor PEIS (CDOT, 2011) and ROD (FHWA, 2011) to present the major findings of the I-70 Mountain Corridor NEPA process. The I-70 Mountain Corridor PEIS *Wetlands and Other Waters of the U.S. Technical Report* identified the following:

- Applicable state and federal regulations.
- Methods used to identify existing conditions in the corridor and an estimate of potential impacts of proposed alternatives on wetlands and other WUS resources.
- Description of existing wetlands and other WUS in the corridor, including general wetlands, fens, and other WUS which included all open waters, riverine, intermittent and seasonal tributaries, and water storage features (e.g., ponds or lakes).
- Descriptions of the sub-basins within the corridor, general geographic locations, acreage quantities for each sub-basin, and graphics showing the locations of mapped wetlands and other WUS in the corridor.

Direct impacts to wetlands and other WUS related to the Action Alternatives included:

- Loss of wetlands and other WUS; however, no loss of fens under any of the Action Alternatives. The Preferred Alternative resulted in the least amount of impacts under the 55 miles per hour design option.

Indirect impacts on wetlands and other WUS related to the Proposed Action Alternatives include the following:

- Increased erosion and sedimentation from winter sanding and effects associated with possible induced growth associated with Action Alternatives.
- Increased stormwater runoff to wetlands, including fens and other WUS. Increased stormwater runoff increases the level of pollutants entering wetland systems, surface flows into adjacent streams, and the creation of channels in wetlands that were previously free of channelization.

- Increased flow capacity from importing water to accommodate increased water supply demands from induced growth would potentially destabilize streambanks throughout the corridor.

- Increased erosion and sedimentation from winter traction sanding and deicing operations would degrade the natural function of wetland and degrades water quality in rivers, stream, reservoirs, and lakes.

## 2.2 How are Wetlands and Other Waters of the U.S. Treated in the Twin Tunnels Expansion Projects (Tier 2)?

The FHWA, in cooperation with CDOT, prepared an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for proposed changes to the eastbound (EB) lanes of I-70 and the EB bore of the Twin Tunnels between MP 241 and MP 244 in Clear Creek County, Colorado (CDOT, 2012a). Capacity improvements extended from MP 241.1 on the west to MP 244.5 on the east and the project limits extended to MP 238.5 on the west side, where signage was added. The Twin Tunnels Proposed Action limits are partially within the WB PPSL Proposed Action limits, which extend to MP 243 on the west. Overlap between the two Proposed Actions runs from MP 238.5 on the west side to MP 243 on the east side.

CDOT prepared a Categorical Exclusion for the Twin Tunnels for the WB lanes of I-70 which is the same study area as the Twin Tunnels EA and FONSI (EB). Findings from this study were similar to the findings from Twin Tunnels EA and FONSI completed for the EB direction.

Findings from the wetlands and other WUS assessment were as follows:

**Proposed Action Effects.** The Proposed Action is assumed to be similar to the 6-lane widening (55 miles per hour) alternative evaluated in the PEIS, but with widening in the EB direction only. The conclusions of this Tier 2 process analysis indicate that neither of the roadway cross-sectional options would result in impacts to wetlands or other WUS in the study area.

**Effects of the Detour.** The effects of detouring EB I-70 traffic to the adjacent frontage road (CR 314) during tunnel construction were evaluated. No permanent impacts to wetlands or other WUS would occur as a result of the detour.

**Construction.** Construction impacts to wetlands and other WUS would not occur.

**Indirect Effects**. No indirect effects were anticipated.

## 2.3 How were Wetlands and Other Waters of the U.S. Treated in the EB I-70 Peak Period Shoulder Lane Categorical Exclusion (Tier 2)?

The FHWA, in cooperation with CDOT, prepared a Categorical Exclusion for proposed changes to the EB lanes of I-70 between approximately MP 230 and MP 243, in Clear Creek County, Colorado (CDOT, 2014). The EB PPSL *Wetlands and other Waters of the U.S. Technical Memorandum* discusses the regulatory setting and describes the affected environment and the impacts of the Proposed Action on wetlands and other WUS within the identified study area. The WB PPSL study area is located within the study boundaries of this Categorical Exclusion.

Findings from the EB PPSL wetlands and other WUS assessment include the following:

- No anticipated direct impacts to wetlands from the EB PPSL project; however, other WUS would be directly impacted in one location: west of the SH 103 interchange where a retaining wall, the base of which sits in Clear Creek, would be reconstructed and lined with boulders to eliminate the existing scour concerns. This wall is approximately 400-feet-long and the new face could be up to 16-inches-wide, resulting in 500 square feet of fill in Clear Creek. By reconstructing the wall, the existing scour, which introduces sediment into Clear Creek and occurs as a result of the wall being undercut, would be eliminated.
- Indirect impacts to wetlands and other WUS would occur from the minor addition of impervious surface, which leads to increased water runoff, erosion, sedimentation, and the use of deicers and traction sand. Potential impacts during construction would result from spills which may cause a pollutant discharge into wetlands or other WUS.
- No temporary construction impacts to wetlands were anticipated. Temporary construction impacts to other WUS would include approximately 4,000 square feet of temporary impacts because of construction personnel working in Clear Creek.

# Section 3. What Process was Followed to Analyze Wetlands and Other Waters of the U.S.?

## 3.1 Methodology

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

- August 17, 2017: Sirena Brownlee and Tara Rae Kent
- August 23 and 24, 2017: Tara Rae Kent and Ryan Hammons
- November 15, 2017: Tara Rae Kent and Sirena Brownlee

The surveys were conducted in accordance with the *U.S. Army Corps of Engineers (USACE)1987 Wetlands Delineation Manual* (Environmental Laboratory, 1987) and its *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (USACE, 2010). The delineation was also performed to reflect guidance in accordance with the U.S. Supreme Court rulings in the Solid Waste Agency of Northern Cook County and Rapanos cases (USEPA, 2008). Potentially jurisdictional WUS, including wetlands, were evaluated using routine on-site delineation methods. The presence of wetlands is determined by the positive indication of three criteria: hydrophytic vegetation, hydrology, and hydric soils. If found, data collected on the evidence of the three criteria is recorded on a Wetland Determination Data Form for the site. The delineated areas were collected with Esri ArcCollector software on an iPad with a sub-meter EOS Arrow 100 bluetooth antennae and recorded in Esri ArcGIS 10.4 software.

Recorded information includes the dominant plant species in each vegetation stratum (i.e., tree, sapling/shrub, herbaceous, and vine). The indicator status of each recorded plant species is determined from *The National Wetland Plant List* (Lichvar et al. 2016). To meet the dominance test for hydrophytic vegetation, greater than 50 percent of the dominant plant species must have an indicator status of facultative (FAC, 34 to 66 percent probability of occurring in wetlands), facultative wetland (FACW, 67 to 99 percent probability), or obligate wetland (OBL, greater than 99 percent probability).

The determination of wetland hydrology is based on the presence of at least one primary or two secondary indicators of a prolonged hydroperiod (i.e., period of inundation/saturation). Primary indicators include surface water, high water table, saturation, water marks, sediment deposits, drift deposits, algal mat or crust, iron deposits, surface soil cracks, inundation visible on aerial imagery, sparsely vegetated concave surface, water-stained leaves, salt crust, aquatic invertebrates, hydrogen sulfide odor, oxidized rhizospheres along living roots, presence of reduced iron, recent iron reduction in tilled soils, and stunted or stressed plants. Secondary indicators include water-stained leaves, drainage patterns, dry-season water table, saturation visible on aerial imagery, geomorphic position, shallow aquitard, FAC-Neutral test, raised ant mounds (Land Resource Region [LRR] A), and frost-heave hummocks.

Hydric soils are defined as soils that are flooded, ponded, or saturated long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile. The determination of hydric soils is generally based on the presence of indicators of an aquic moisture regime and hydric conditions. Aquic moisture regimes occur under anaerobic conditions and could develop from continuous saturation for at least 5 percent of the growing season. At least one positive hydric soil indicator at each site is required to classify the soil as hydric. For example, soils in prolonged anaerobic conditions undergo chemical reduction of iron and manganese, thereby producing low-chroma soil colors. Additionally, if reduced iron and manganese in inundated or saturated soil is exposed to oxygen in other areas of the soil ped (e.g., root pores and ped faces), areas of concentrated high-chroma mottles develop that are referred to as redoximorphic features. During the field survey, colors of the soil profile matrix and mottles are identified using Munsell® soil color charts. Additional characteristics of soil profile, texture, color, topography, and field indicators of hydrology are also considered in determining the presence of hydric soil.

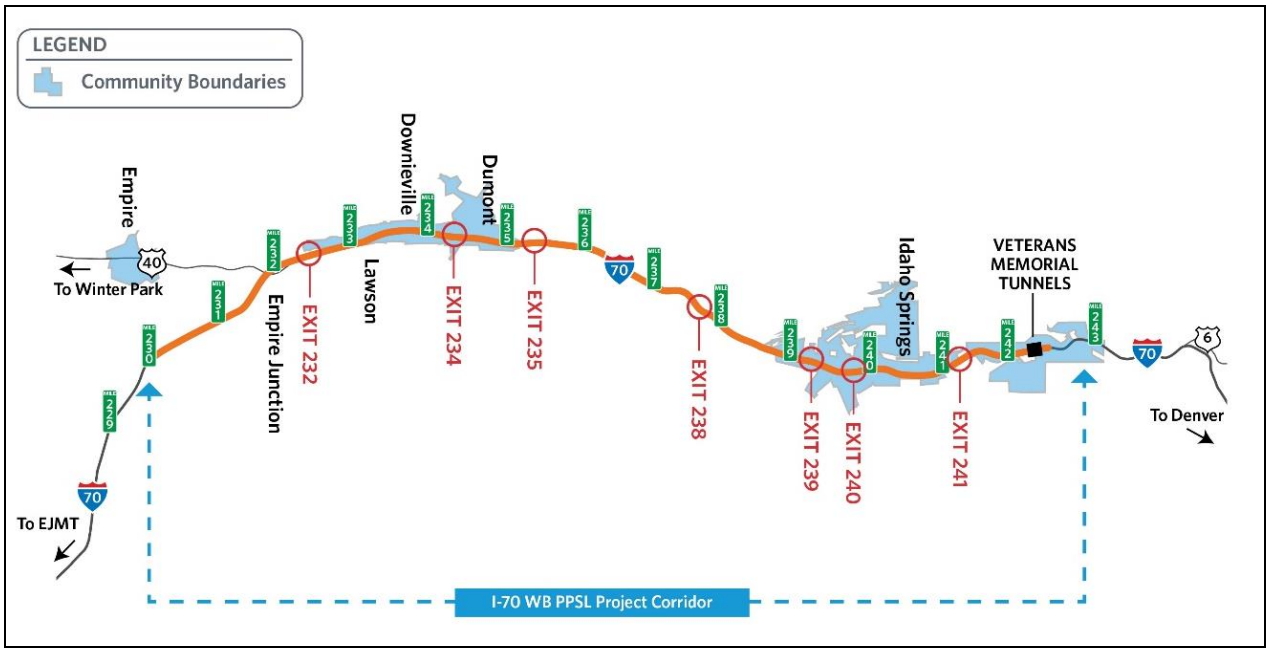
## 3.2 Study Area

The study area for the WB PPSL project encompasses CDOT right-of-way along I-70 in both directions from MP 243 to MP 230 and areas immediately adjacent to the right-of-way. This study area was used to evaluate the **direct** effects of the Proposed Action.

For transportation and socioeconomic impacts, the study area for **indirect** effects includes Clear Creek County and the communities of Idaho Springs, Downieville-Lawson-Dumont, and the town of Empire. This area is broadly defined and includes the communities and other areas that would be **indirectly** affected by the Proposed Action. The indirect effects study area includes the communities shown in Figure 2.

For the remaining resources, the study area for **indirect** effects generally includes a 0.25-mile buffer around the study area. This area encompasses the communities and other areas that would be indirectly affected by the Proposed Action.

**Figure 2. Study Area Communities**




## 3.3 Regulations and Guidance

Agencies that regulate impacts to the nation's surface water resources within Colorado are the USACE, the U.S. Environmental Protection Agency (USEPA), and the Colorado Department of Public Health and Environment (CDPHE). Wetlands and other WUS are protected under Sections 401 and 404 of the Clean Water Act (CWA) and Executive Order (EO) 11990 (Protection of Wetlands). The USACE has the primary regulatory authority for enforcing Section 404 requirements for jurisdictional WUS, including wetlands and CDPHE administers the Section 401 water quality certification program to ensure water quality protection during and following placement of fill into waters of the U.S. (for example, construction activities). The USEPA has final authority in jurisdictional determination rulings. The stated objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 404 of the Act requires the issuance of a permit by the USACE for the release of dredged or fill material into jurisdictional "Waters of the United States" which includes wetlands.

Wetlands are protected under EO 11990, *Protection of Wetlands* (43 Federal Register 6030). This EO requires that Federal agencies provide leadership and take actions to minimize or avoid the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. The Federal government, including the FHWA, operates on a policy of "no net loss" of wetlands, meaning that operations and activities shall avoid the net loss of size, function, or value of wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland.

CDOT Wetland Guidance states that a Wetland Finding needs to be completed if permanent impacts to wetlands and other WUS exceed 500 square feet or a combination of permanent and temporary impacts exceed 1,000 square feet. Additonally, a Functional Assessment of Colorado Wetlands (FACWet)

analysis is required for CDOT/FHWA projects and FHWA-funded projects if the impact to wetland habitat is 0.10 acre or greater (CDOT, 2016).

CDOT's wetlands program requires one-to-one replacement of both jurisdictional and non-jurisdictional wetlands impacted by projects.

## 3.4 Definitions

The Code of Federal Regulations (33 CFR 328.3) defines WUS as:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
- All interstate waters including interstate wetlands.
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
  - Which are, or could be, used by interstate or foreign travelers for recreational or other purposes; or
  - From which fish or shellfish are, or could be, taken and sold in interstate or foreign commerce; or
  - Which are used, or could be used, for industrial purposes by industries in interstate commerce.
- All impoundments of waters otherwise defined as waters of the U.S. under the definition.
- Tributaries of waters of the U.S. identified above.
- The territorial seas.
- Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in the paragraphs above. The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by human-made dikes or barriers, natural river berms, beach dunes, and the like are "adjacent wetlands."

### 3.4.1 Streams

In general, the jurisdictional extent of a stream is defined by the OHWM, which is delineated as the line on the shore/bank established by flowing and/or standing water. It is marked by such characteristics as a clear, natural line impressed on the bank; erosion shelving; changes in the character of soil; destruction of terrestrial vegetation; presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas.

### 3.4.2 Wetlands

Wetlands can be waters of the U.S. and are defined by 33 CFR part 328.3 as areas that are "inundated or saturated by surface or ground water at a frequency and duration sufficient to support—and that under normal circumstances do support—a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." However, temporarily or seasonally flooded depressions that receive overland storm runoff or overbank floodwaters can meet

the necessary criteria and be considered wetlands. This is often when slowly permeable soils remain inundated or saturated, which results in anaerobic conditions.

### 3.4.3 Open Waters

Open water features, also referred to as deepwater aquatic habitats, are defined as areas that are permanently inundated at mean annual water depths greater than 6.6 feet or permanently inundated areas less than or equal to 6.6 feet in depth that do not support rooted-emergent or woody plant species. Open water features are delineated based on areas with standing water, void of vegetation at the time of the delineation, as well as historical aerial photographs predominantly showing the same characteristics.

## 3.5 Public Involvement

Individuals from local jurisdictions, communities, state and federal agencies, and special interest groups were a part of an 18-member Project Leadership Team (PLT) and a 48-member Technical Team (TT). The PLT and the TT guided the NEPA and the concept development process.

Many suggestions and concerns were identified during the concept development process and the NEPA process, including neighborhood and business concerns (from Idaho Springs; Downieville, Dumont, and Lawson neighborhoods; from businesses throughout the corridor; and others). One comment was received specific to wetlands and other WUS resources, which requested that wetlands be considered during the design phase.

## 3.6 Agency Coordination Conducted

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 wetlands and other WUS resources for this project are listed in Table 1.

**Table 1. Coordination and Consultation Summary**

| Agency or Committee | Meeting Date | Purpose of Meeting |
|---|---|---|
| Environmental Scoping Meeting | June 19, 2017 | To present information and solicit input from environmental specialists and resource leads to incorporate into scoping information |
| Stream and Wetland Ecological Enhancement Program (SWEEP) Committee | September 11, 2017 | Provide overview of project and discuss issues relating to water quality, wetlands, and aquatic resources. |
| A Landscape Level Inventory of Valued Ecosystem Components (ALIVE) Committee | September 11, 2017 | Provide overview of project and discuss issues relating to water quality, wetlands, and aquatic resources |
| ALIVE | January 18, 2018 | Review potential mitigation, their benefits and issues, and discuss alternatives. |
| ALIVE/SWEEP | April 10, 2018 | Refine wildlife mitigation solutions and integrate concerns about sediment ponds acting as wildlife attractants into the siting and design of sediment ponds |

**Table 1. Coordination and Consultation Summary**

| Agency or Committee | Meeting Date | Purpose of Meeting |
|---|---|---|
| ALIVE | July 13, 2018 | Review the site specific locations and design of wildlife mitigation features. |

# Section 4. Description of the Proposed Action

The WB PPSL project adds an approximate 12-mile tolled PPSL on WB I-70 between the Veterans Memorial Tunnels (just west of MP 243) and the US 40/I-70 interchange (MP 232). The lane entrance begins approximately 500 feet east of the Veterans Memorial Tunnels portal. The WB PPSL maximizes the use of the existing alignment and infrastructure in order to minimize any new impacts within the study area. The 11-foot lane is open for use only during peak periods, and otherwise serves as the shoulder of the interstate. Use of the WB PPSL is prohibited for trucks, buses, or any vehicle over 25 feet long. Overhead signs showing the lane status and toll rate are located throughout the corridor and at the entrance point.

An ingress/entrance point for traffic coming onto WB I-70 from Idaho Springs is provided approximately 2,500 feet west of Exit 239. An egress point for traffic exiting to Downieville is provided about 4,400 feet east of Exit 235, and an egress point for traffic exiting to US 40 is provided approximately 4,400 feet east of Exit 232.

The WB PPSL ends approximately 1/2 mile west of Exit 232. Figure 3 illustrates the typical cross sections of the Proposed Action.

Improvements include:

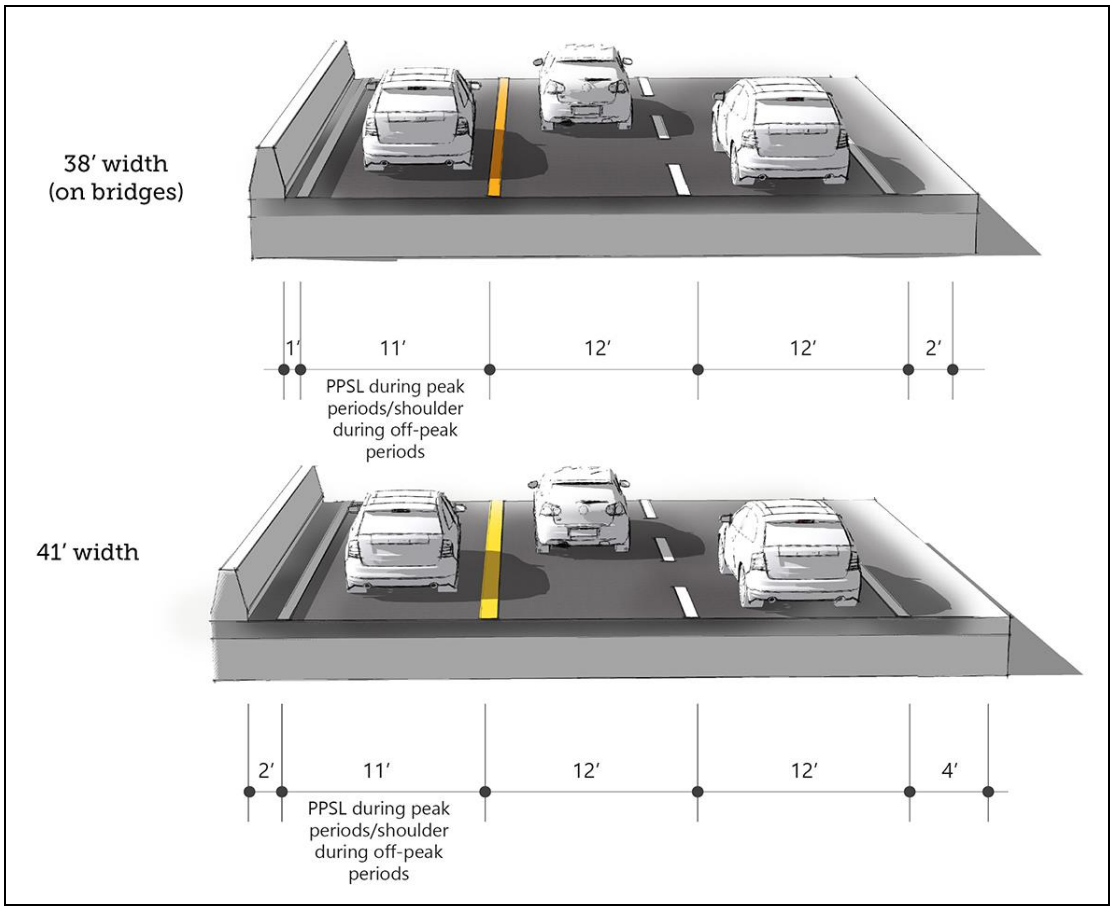
**I-70 Modifications.** The general purpose lanes and shoulder of WB I-70 are resurfaced and widened in select locations on the existing alignment between approximately MP 241.5 and MP 232 to accommodate a lane on the shoulder during peak travel periods. Drainage enhancements include a storm system for minor and major storm events and water quality facilities. At SH 103, I-70 is slightly realigned to enhance safety and improve drainage.

**SH 103 Interchange Improvements.** Ramp improvements address sight distance problems. The pedestrian sidewalk is improved by adding lighting and a decorative paving buffer adjacent to the existing sidewalk on the SH 103 bridge over I-70. This sidewalk connects to a new sidewalk buffered from 13th Avenue between the interchange ramp and Idaho Street in Idaho Springs.

**Safety Pull-Outs.** A total of seven new safety pull-outs are built—five along WB I-70 and two along EB I-70. One existing safety pull-out on EB I-70 is improved. The intention of these is to provide a space for vehicles to use if they experience a break down and for law enforcement to use.

**Rockfall Mitigation.** Rockfall mitigation measures are added at five locations to reduce the chance of rocks or other debris from falling on travel lanes or shoulders and reduce the potential for crashes and travel disruptions. Rockfall mitigation measures are included in the WB direction at MP 239, MP 238.4, MP 237.1, and MP 236.4, and in the EB direction at MP 240.3.

**Figure 3. WB PPSL Proposed Action Typical Cross Sections**




Source: HDR 2018.

**Active Traffic Management.** Dynamic signage informs drivers so the WB PPSL is appropriately used to reduce congestion. This innovative design improves mobility.

**Fiber Optic Upgrades.** Fiber optics are designed to accommodate future emerging technologies for autonomous and connected vehicles, improving driver information and emergency response capabilities.

**Dumont Port-of-Entry Interchange.** Merge area improvements to the Dumont interchange acceleration lane includes restriping of I-70 to reduce merge conflicts between truck traffic and the general-purpose lane traffic.


***Dynamic signage***

# Section 5. What are the Wetlands and Other Waters of the U.S. Resources in the Study Area?

## 5.1 Current Conditions

### 5.1.1 Environmental Setting

#### *Plant Communities*

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 the montane and foothills zones and the vegetation communities are predominantly evergreen forests and scrub/shrub communities (Chapman et al. 2006). The montane zone is characterized by open stands of ponderosa pine (*Pinus ponderosa*) at lower elevations and Douglas-fir (*Pseudotsuga menziesii*) forests at higher elevations. Areas north of I-70 are mainly ponderosa pine forest and south of I-70 are mainly Douglas-fir forest.

The foothills zone occurs at lower elevations from 6,000 feet to approximately 8,000 feet and is dominated by ponderosa pine, pinyon-juniper woodlands, deciduous scrublands, and grasslands. Other species that are found in the foothills and montane zones include aspen (*Populus tremuloides*), lodgepole pine (*Pinus contorta*), whortleberry (*Vaccinium myrtillus*), gooseberry currant (*Ribes montigenum*), common juniper (*Juniperus communis*), mountain mahogany (*Cercocarpus montanus*), mountain muhly (*Muhlenbergia montana*), blue grama (*Bouteloua gracilis*), Rocky Mountain juniper (*Juniperus scopulorum*), and a variety of grasses (Chapman et al., 2006).

Grasses and forbs observed in the study area during the August 2017 surveys included wild strawberry (*Fragaria virginiana*), yarrow (*Achillea millefolium*), Kentucky bluegrass (*Poa pretensis*), common mallow (*Malva parviflora*), common mullein (*Verbascum thapsus*), dandelion (*Taraxacum officinale*), fireweed (*Epilobium angustifolium*), salsify (*Tragopogon dubius*), cinquefoil (*Potentilla* sp.), goldenrod (*Solidago* sp.), white clover (*Trifolium repens*), Rocky Mountain iris (*Iris missouriensis*), vetch (*Astragalus* sp.), wallflower (*Erysimum* sp.), yellow sulfur buckwheat (*Eriogonum umbellatum*), Fendler's meadow-rue (*Thalictrum fendleri*), onion (*Allium* sp.), Scotch thistle (*Onopordum acanthium*), lupine (*Lupinus* sp.), pearly everlasting (*Anaphalis margaritacea*), Canada bluegrass (*Poa compressa*), blue grama, smooth spreading four o'clock (*Mirabilis oxybaphoides*), western wheatgrass (*Pascopyrum smithii*), pineywoods geranium (*Geranium caespitosum*), cliff false goldenaster (*Heterotheca viscida*), pigweed (*Amaranthus retroflexus*), narrowleaf plantain (*Plantago lanceolata*), horehound (*Marrubium vulgare*), catnip (*Nepeta cataria*), field bindweed (*Convolvulus arvensis*), penstemon (*Penstemon* sp.), orchardgrass (*Dactylis glomerata*), and prickly lettuce (*Lactuca serriola*).

The south side of I-70 is characterized by steep, riprap banks and narrow bands of riparian habitat adjacent to Clear Creek. Riparian habitat occurs along Clear Creek in a discontinuous band, and in drainage areas that 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*), sandbar willow (*Salix exigua*), and Engelmann spruce (*Picea engelmannii*). Riparian vegetation observed in the project study area included common sheep sorrel (*Rumex acetosella*), dewystem willow (*Salix irrorata*), park willow (*Salix monticola*), willow (*Salix* sp.), field

horsetail (*Equisetum arvense*), poison hemlock (*Conium maculatum*), broadleaf plantain (*Plantago major*), stinging nettle (*Urtica dioica*), box elder (*Acer negundo*), and sedge (*Carex* sp.).

The north side of I-70 contains extensive rocky cliff areas sparsely vegetated with juniper, ponderosa pine, Gambel's oak (*Quercus gambelii*), Douglas fir, pinyon pine (*Pinus edulis*), Mescalero currant (*Ribes mescalerium*), and rose (*Rosa* sp.).

The human-created environment in the study area is characterized by highways, roads, towns, single home sites, and recreational developments along Clear Creek. Forest Service-owned lands adjacent to the study area provide recreation opportunities including camping, hiking, and equestrian activities.

### *Soils*

The main types of soil within the study area (approximately 68 percent) are comprised of the following soils series (NRCS, 2017):

- Lone Rock-Breece gravelly sandy loams, 2 to 9 percent slopes
- Rock outcrop-Cathedral-Resort complex, 30 to 70 percent slopes

The Lone Rock-Breece gravelly sandy loams, 2 to 9 percent slopes soil unit occurs on alluvial fans and terraces and is somewhat excessively drained. The soil unit is formed when alluvium is derived from igneous and metamorphic rocks. The typical profile is gravelly sandy loams from 0 to 6 inches below ground surface and very gravelly loamy sand from 9 to 60 inches below ground surface. The unit is considered a farmland of statewide importance.

The Rock outcrop-Cathedral-Resort complex, 30 to 70 percent slopes soil unit occurs on cliffs, mountain slopes, and ridges. The soil unit is formed from igneous and metamorphic rock. The typical profile is cobbly and gravely sandy loams to 11 inches below ground surface and unweathered bedrock from 11 to 15 inches below ground surface. The soil type is not considered prime farmland and is well-drained.

In addition to these two types, the remaining soil map units are shown in Table 2 and Appendix A of this document.

**Table 2. Characteristics of Soils Mapped in the Study Area**

| Mapping Unit Symbol and Name | Texture | Percent Slope | Location | Drainage Class | Prime Farmland* | Hydric Soil |
|---|---|---|---|---|---|---|
| 1—Arents-Dumps, mine complex | Loamy sand | 5 to 80 | Eastern segment; MP 243; Central City Parkway, east of Idaho Springs | Somewhat excessively drained | No | No |
| 24—Lininger-Breece gravelly sandy loams | Sandy loam and sandy clay loam | 3 to 12 | Middle segment; MP 234; West of Idaho Springs, along Clear Creek near Silver Lakes Drive | Well drained | Farmland of Statewide Importance | No |

**Table 2. Characteristics of Soils Mapped in the Study Area**

| Mapping Unit Symbol and Name | Texture | Percent Slope | Location | Drainage Class | Prime Farmland* | Hydric Soil |
|---|---|---|---|---|---|---|
| 27—Lone Rock-Breece gravelly sandy loams | Loamy sand | 2 to 9 | Western segment; MP 235; Silver Lakes Drive between Downieville and Lawson; along Clear Creek | Somewhat excessively drained | Farmland of Statewide Importance | Yes |
| 228—Lone Rock-Breece gravelly sandy loams | Loamy sand | 9 to 15 | Western segment; MP 232; Dumont US40 Interchange | Somewhat excessively drained | No | No |
| 31—Mammoth-Ohman-Bendemeere complex | Sandy loam | 30 to 60 | Western and Eastern segments; MP 232; MP 240 | Well Drained | No | No |
| 35—Ohman-Legault very gravelly sandy loams | Sandy loam | 30 to 60 | Eastern segment; MP 243; Central City Parkway | Well drained | No | No |
| 5—Cathedral-Rock outcrop complex | Sandy loam | 30 to 70 | Eastern segment; MP 243; Central City Parkway | Well drained | No | No |
| 50—Rock outcrop-Cathedral-Resort complex | Sandy loam | 30 to 70 | Middle segment; MP 236 and Fall River Road (MP 238); MP 239; MP 241 | Well drained | No | No |
| 51—Rock outcrop-Resort complex, 30 to 80 percent slopes | Sandy loam | 30 to 80 | Western segment; MP 233, MPs 230-231 | Somewhat excessively drained | No | No |
| 53—Rock outcrop-Rubble land-Cathedral complex, 40 to 100 percent slopes | Unweathered bedrock | 40 to 100 | Western segment; MP 230 | Excessively drained | No | No |
| 54—Rock outcrop-Tolland complex | Sandy loam | 30 to 100 | Eastern segment; MP 241 | Well drained | No | No |
| 62—Typic Cryaquents-Cumulic Cryaquolls complex | Sandy loam | 0 to 3 | Western segment; MP 231 | Poorly drained | No | Yes |

Source: NRCS, 2017.

*Farmland of Statewide Importance is land that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops (NRCS, 2018).

### *Hydric Soils*

Of the soil types listed in Table 2, Lone Rock-Breece gravelly sandy loams, 2 to 9 percent slopes and Typic Cryaquents-Cumulic Cryaquolls complex, 0 to 3 percent slopes, soils are listed in the National Hydric Soils List (NRCS, 2015). These soil map units make up approximately 46 percent of the soils present in the study area and are described as frequently ponded or poorly drained (NRCS, 2015).

### *Hydrology*

Water features in the study area drain to Clear Creek. Clear Creek is a tributary of the South Platte River, east of the study area. The South Platte River flows northeast and converges with the Missouri River, a traditional navigable water, in eastern Nebraska and eventually drains into the Mississippi River in eastern Missouri.

### *Climate*

The study area is located in the Rocky Mountain Range and Forest Land Resource Region—Southern Rocky Mountains Major Land Resource Area (NRCS, 2006). The climate in the study area is semiarid. The average annual precipitation ranges from 7 to 63 inches but is dominantly 14 to 32 inches with the greatest amount of precipitation received during the spring and summer. Fall and winter are comparatively dry. The freeze-free period averages 135 days and ranges from 45 to 230 days (NRCS, 2006).

## 5.1.2 Wetlands and Other Waters of the U.S.

Waters of the U.S. within the study area consist of 12 stream channels and 1 wetland (Table 3).Appendix A of this document contains maps of the WUS in the study area along with soils data, National Wetlands Inventory data, and Federal Emergency Management Agency data. Representative site photographs can be found in Appendix B and wetland determination data forms are located in Appendix C of this document.

**Table 3. Summary of Waters of the U.S. within the Study Area**

| Description | Acreage Within the Study Area |
|---|---|
| Streams | 1.194 |
| Wetlands | 0.014 |
| **Total** | **1.208** |

### *Streams and Open Waters*

The study area includes 10 perennial stream channels, totaling 2,953 linear feet in length (1.193 acres in size) and 2 intermittent stream channels, totaling 28 linear feet in length (0.0006 acre in size) (Table 4 and Appendix A). The study area does not contain any open water features.

Stream segments S-1A, S-1B, S-1C, S-1D, S-1E, S-1F, S-1G, and S-1H are all portions of Clear Creek as it flows east through the study area. As a result of human disturbance, the presence or absence of riprap bank stabilization, and riverine meanders, the stream segments vary in average OHWM, and range from 32 feet to 77 feet. Linear feet present in the study area also varies because of the meander of Clear Creek along the I-70 corridor. Riparian vegetation includes water birch, sedges, stinging nettle, narrowleaf cottonwood, sandbar willow, wax currant, thinleaf alder, and dewystem willow.

**Table 4. Streams and Open Waters within the Study Area**

| Resource ID | Description | Average OHWM width (ft.)* | Classification ** | Linear Feet Within the Study Area | Acreage Within the Study Area |
|---|---|---|---|---|---|
| S-1A | Perennial | 64 | RPW | 125 | 0.148 |
| S-1B | Perennial | 77 | RPW | 101 | 0.177 |
| S-1C | Perennial | 54 | RPW | 935 | 0.282 |
| S-1D | Perennial | 52 | RPW | 148 | 0.174 |
| S-1E | Perennial | 32 | RPW | 30 | 0.025 |
| S-1F | Perennial | 36 | RPW | 322 | 0.066 |
| S-1G | Perennial | 36 | RPW | 164 | 0.019 |
| S-1H | Perennial | 56 | RPW | 1,085 | 0.281 |
| S-2 | Perennial | 15 | RPW | 14 | 0.005 |
| S-3 | Intermittent | 1 | RPW | 19 | 0.0004 |
| S-4 | Intermittent | 1 | RPW | 9 | 0.0002 |
| S-5 | Perennial | 28 | RPW | 29 | 0.016 |
| **Total** | **-** | **-** | - | **2,981** | **1.194** |

*OHWM: ordinary high water mark.

**RPW: Relatively permanent water that flows indirectly into traditional navigable water.

Non-RPW: Non-relatively permanent water that flows indirectly into a traditional navigable water.

Stream S-2 is located in the eastern portion of the study area east of MP 240 in Idaho Springs. The perennial stream feature is also known as Soda Creek as it flows north through the study area and converges with Clear Creek in Idaho Springs. Within the study area, stream S-2 is a culvert outfall from I-70. Riparian vegetation includes Booth's willow (*Salix boothii*), prickly lettuce, kochia, and lambs quarters. Within the study area, stream S-2 has an average OHWM of 15 feet and is 14 feet in length.

Intermittent streams S-3 and S-4 are located in the middle portion of the study area, west of Idaho Springs. Stream S-3, near MP 238, is also known as Georgia Gulch. Riparian vegetation includes upland species such as smooth brome, prairie sage (*Artemesia ludoviciana*), lodgepole pine, and Douglas fir. Stream S-4 is also known as Spring Gulch as it drains downslope adjacent to Spring Gulch Road near MP 236. Riparian vegetation includes Douglas fir, wax currant, chokecherry, Woods' rose, curlycup gumweed (*Grindelia squarrosa*), and blue grama. Streams S-3 and S-4 have an average OHWM of 1 foot each. Within the study area, streams S-3 and S-4 are 19 and 9 feet in length, respectively.

Perennial stream S-5 is located in the middle portion of the study area. Stream S-5, also known as Mill Creek, is contained within a large concrete-lined drainage and flows south under I-70 and converges with Clear Creek. Riparian vegetation includes sandbar willow, water birch, narrowleaf cottonwood, horsetail, and cow parsnip. Within the study area, stream S-5 has an average OHWM of 28 feet and is 29 feet in length.

### *Wetlands*

The study area contains one emergent wetland totaling 0.014 acre in size that is considered a potentially jurisdictional WUS (Table 5 and Appendix A).

**Table 5. Wetlands within the Study Area**

| Resource ID | Description* | Classification† | Acreage Within the Study Area |
|---|---|---|---|
| W-1 | Palustrine Emergent | Adjacent | 0.014 |
| **Total** | **-** | **-** | **0.014** |

*Classification according to Cowardin et al.,1979.

†Adjacent: Wetland adjacent to a relatively permanent water.

Wetland W-1 is located in the middle portion of the study area near Dumont. The wetland depression is hydrologically fed by upland runoff of I-70 to the south and overland flow from CR 308 to the north. Soils in the wetland show redoxomorphoic characteristics starting at 6 inches below ground surface. Wetland W-1 is dominated by water sedge (*Carex aquatilis*) and rufous bulrush (*Scirpus pendulus*). Within the study area, emergent wetland W-1 is 0.014 acre in size. Wetland W-1 is represented by DP-1 (within the wetland) and DP-2 (in adjacent uplands) wetland determination data forms provided in Appendix C of this document.

## 5.2 Future Conditions

A primary factor affecting wetlands and other WUS in the study area is increased traffic growth on I-70, as Colorado's population continues to grow and additional Front Range residents use I-70 to access summer and winter recreational opportunities in the mountains. The PEIS indicated that traffic volumes throughout the entire I-70 Mountain Corridor are expected to increase 29 to 43 percent by the year 2035. With projected increases in I-70 future traffic volumes, the study area is likely to require additional road maintenance including traction sand and deicers which have the potential to leach into wetlands and other WUS and impair water quality.

Impacts to Clear Creek water quality will continue to be a major concern in the future as further development encroaches upon the creek. Sedimentation is a concern for Clear Creek as identified by the SWEEP committee. Improvement to water quality is focused on reducing sedimentation through the capture of highway-applied traction sand and a reduction in hillslope erosion.

# Section 6. What are the Environmental Consequences?

## 6.1 How Does the Proposed Action Affect Wetlands and Other Waters of the U.S.?

### 6.1.1 What Direct Effects are Anticipated?

Impacts to wetlands and other WUS were assessed by overlaying the proposed roadway plans with the WUS data layers.

No direct permanent or temporary impacts to WUS would be expected from the implementation of the Proposed Action.

### 6.1.2 What Indirect Effects Are Anticipated?

Indirect impacts to wetlands and other waters of the U.S. in the study area are possible from construction activities; from the addition of impervious surface, which leads to increased erosion, sedimentation; and from the use of deicers and traction sand. Potential impacts during construction are possible if spills of fuels or other materials cause a pollutant discharge into WUS. Removal of soil and vegetation to construct the Proposed Action may result in increased erosion, which may result in increased sedimentation in WUS.

### 6.1.4 What Effects Occur During Construction?

A 10-foot buffer was assumed for a construction footprint. No wetlands or other WUS were identified within the construction buffer and therefore there is no direct temporary impact to wetlands or other WUS during construction.

### 6.1.5 Would there be Cumulative Effects?

The Proposed Action, when combined with other reasonably foreseeable future actions, has no cumulative effect on wetlands and other WUS because it has no effect on these resources.

### 6.1.6 Permitting

No CWA Section 404 permits are needed.

## Section 7. What Mitigation Is Needed?

No compensory wetland mitigation is required for this Project because the Proposed Action does not impact wetlands.

For mitigation pertaining to water quality, please see the *WB I-70 PPSL Water Quality Technical Report*.

## Section 8. References

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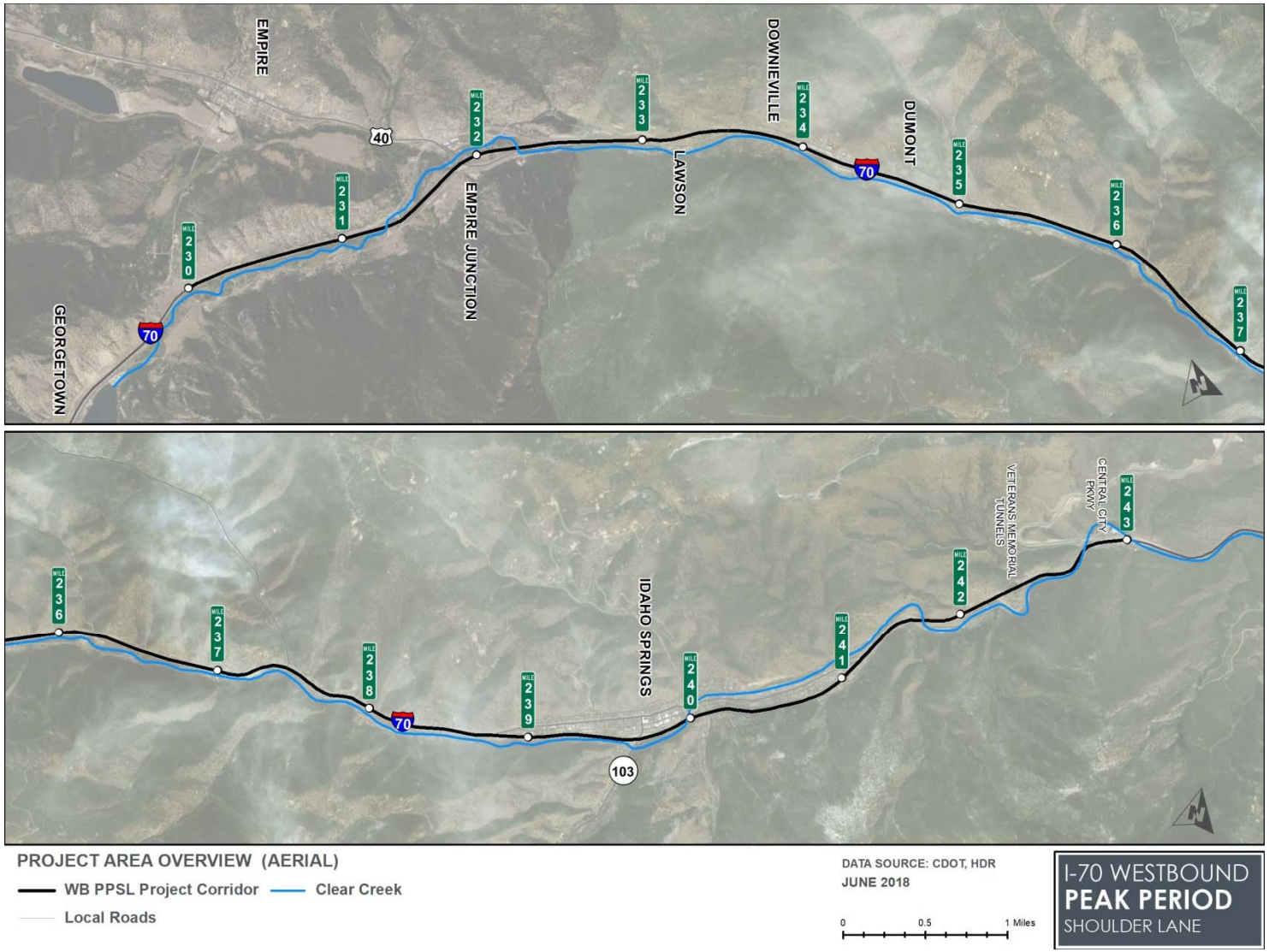
Appendix A.

# Maps

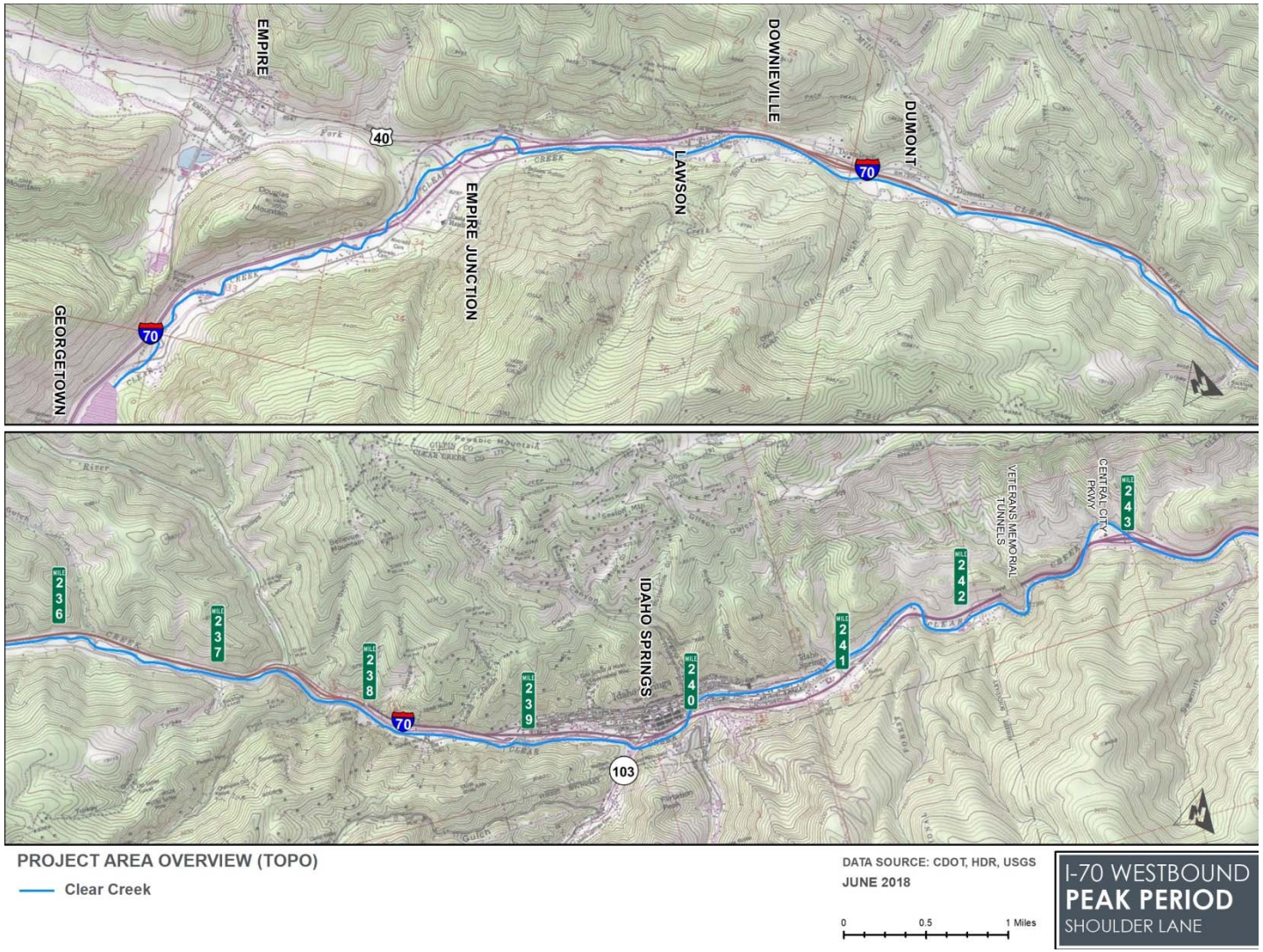
**Aerial, Topographical, Waters of the U.S., Soils, National Wetlands Inventory, and FEMA**

**Figure A-1. Aerial Overview of Study Area**



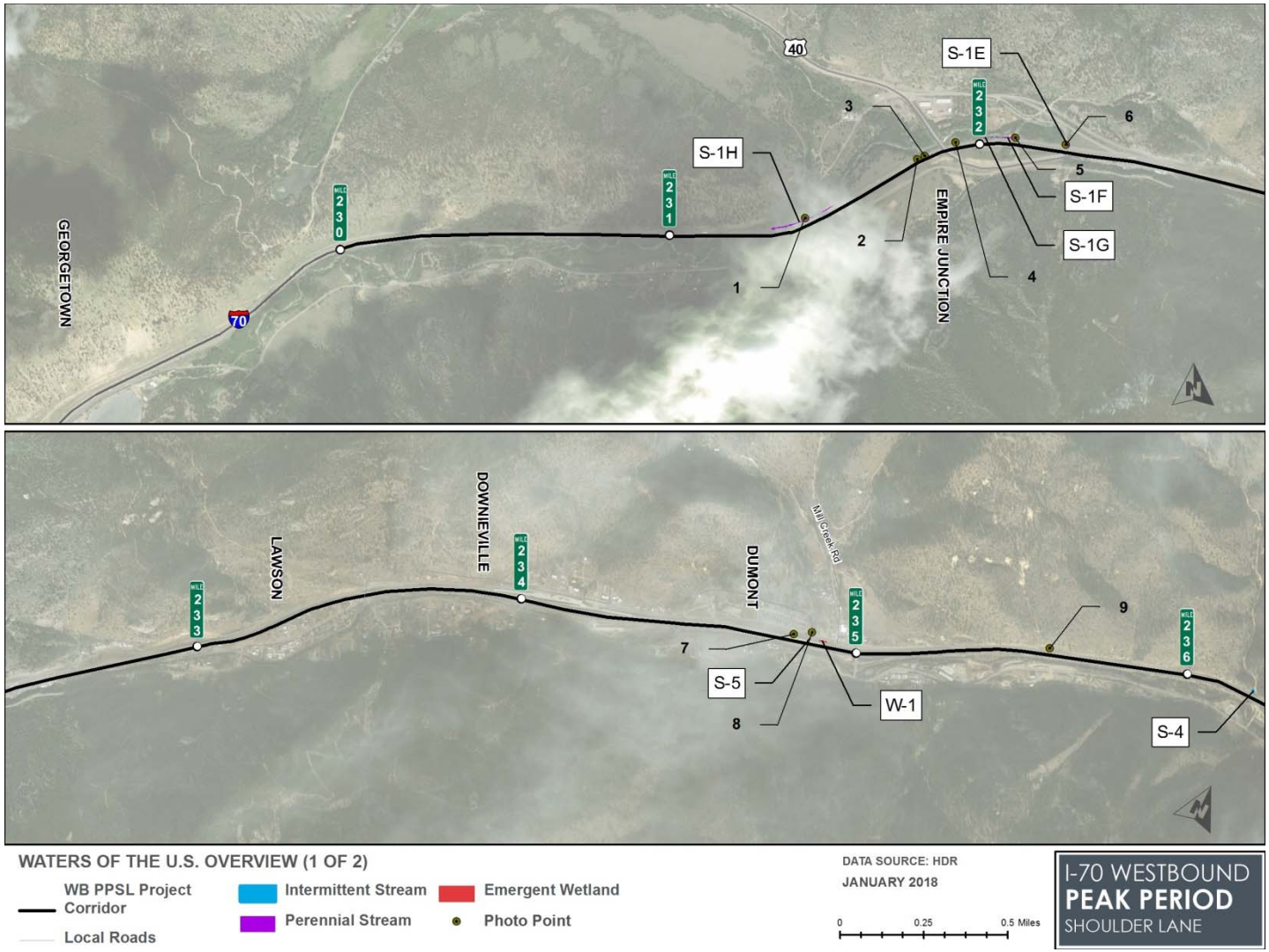

Source: HDR, 2018.

**Figure A-2. Topographical Overview of Study Area**



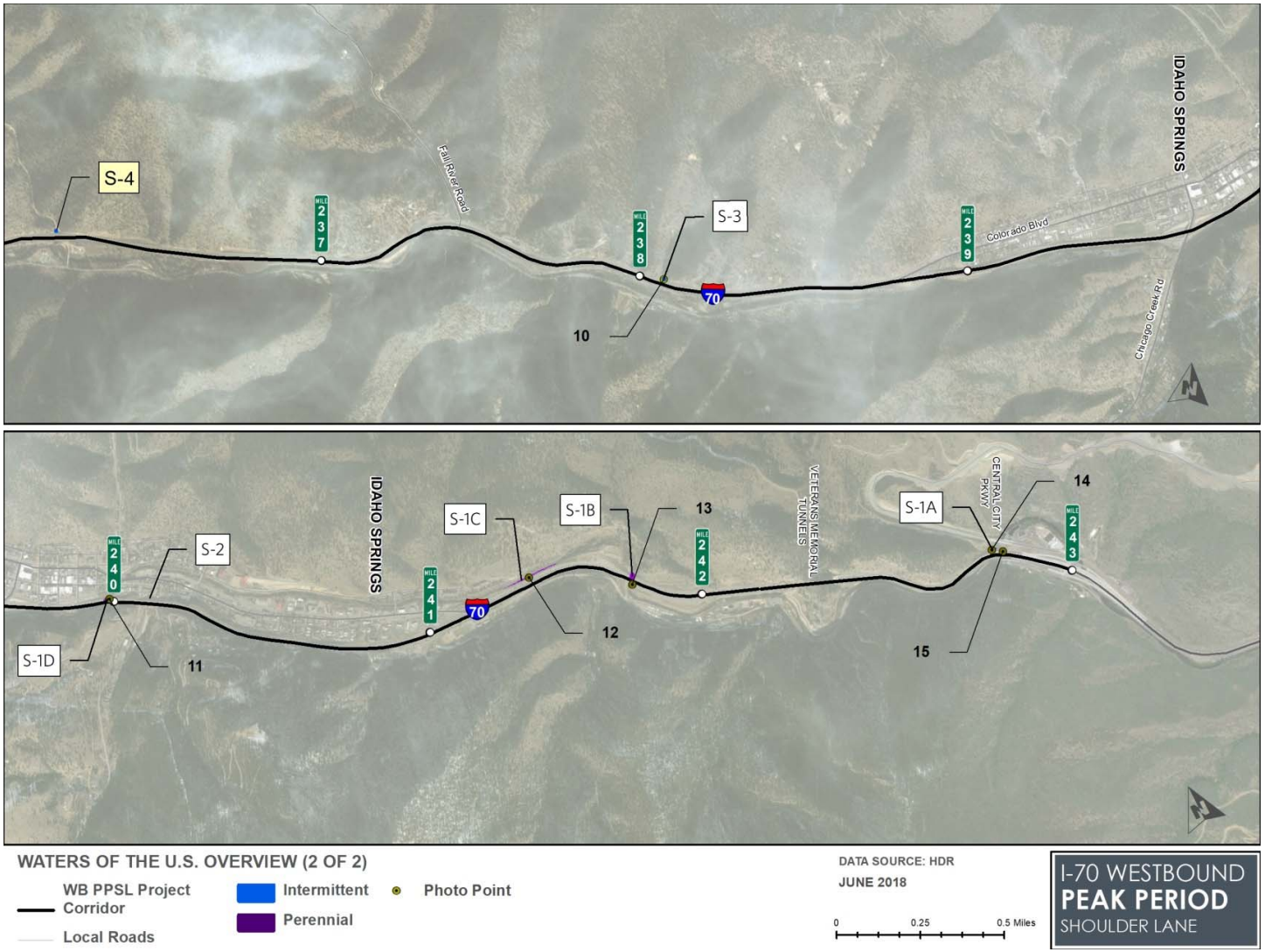

Source: HDR, 2018.

**Figure A-3. Overview of Wetlands and Other Waters of the U.S. in the Study Area**



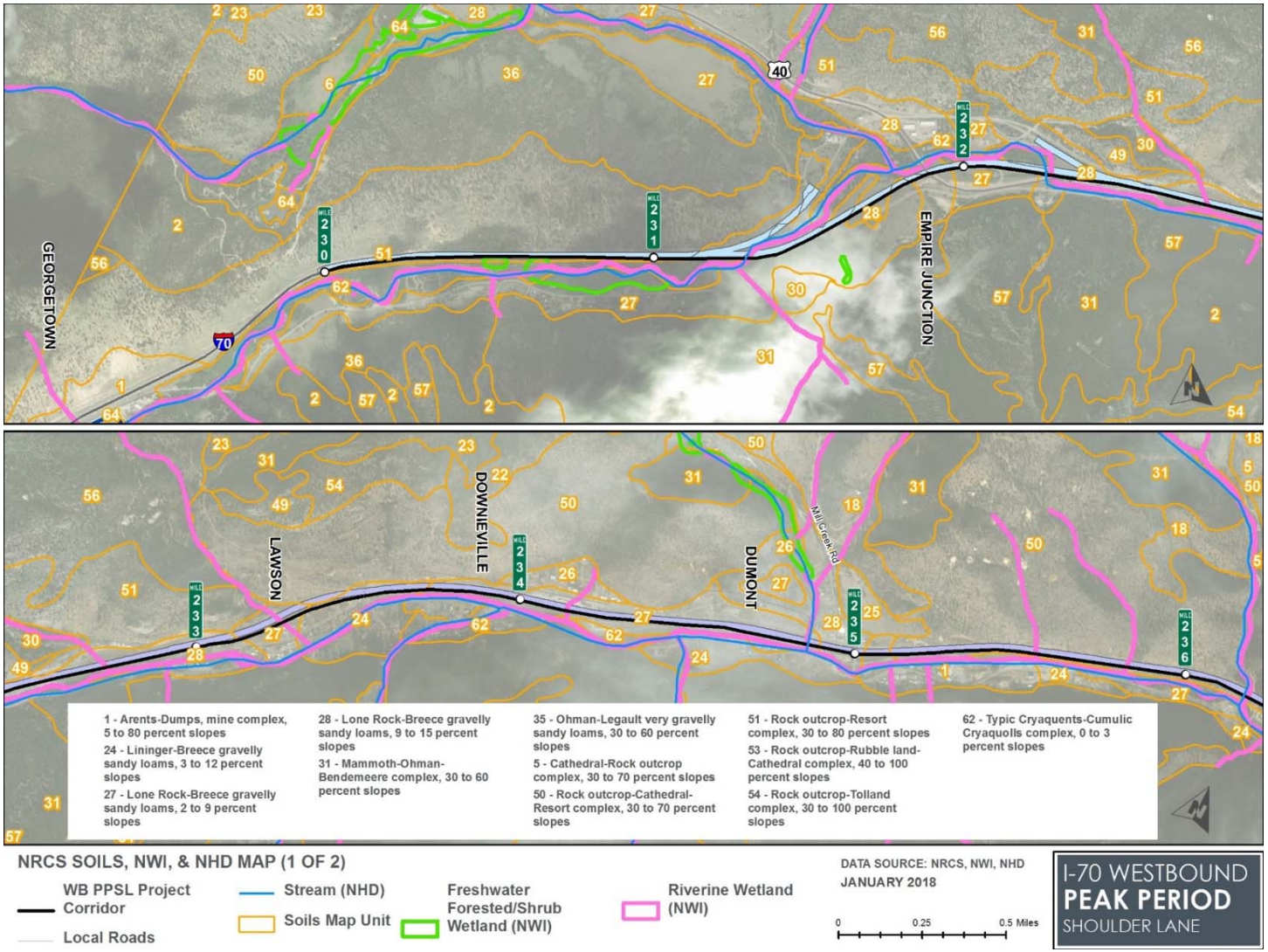

Source: HDR, 2018.

**Figure A-4. Overview of Wetlands and Other Waters of the U.S. in the Study Area**



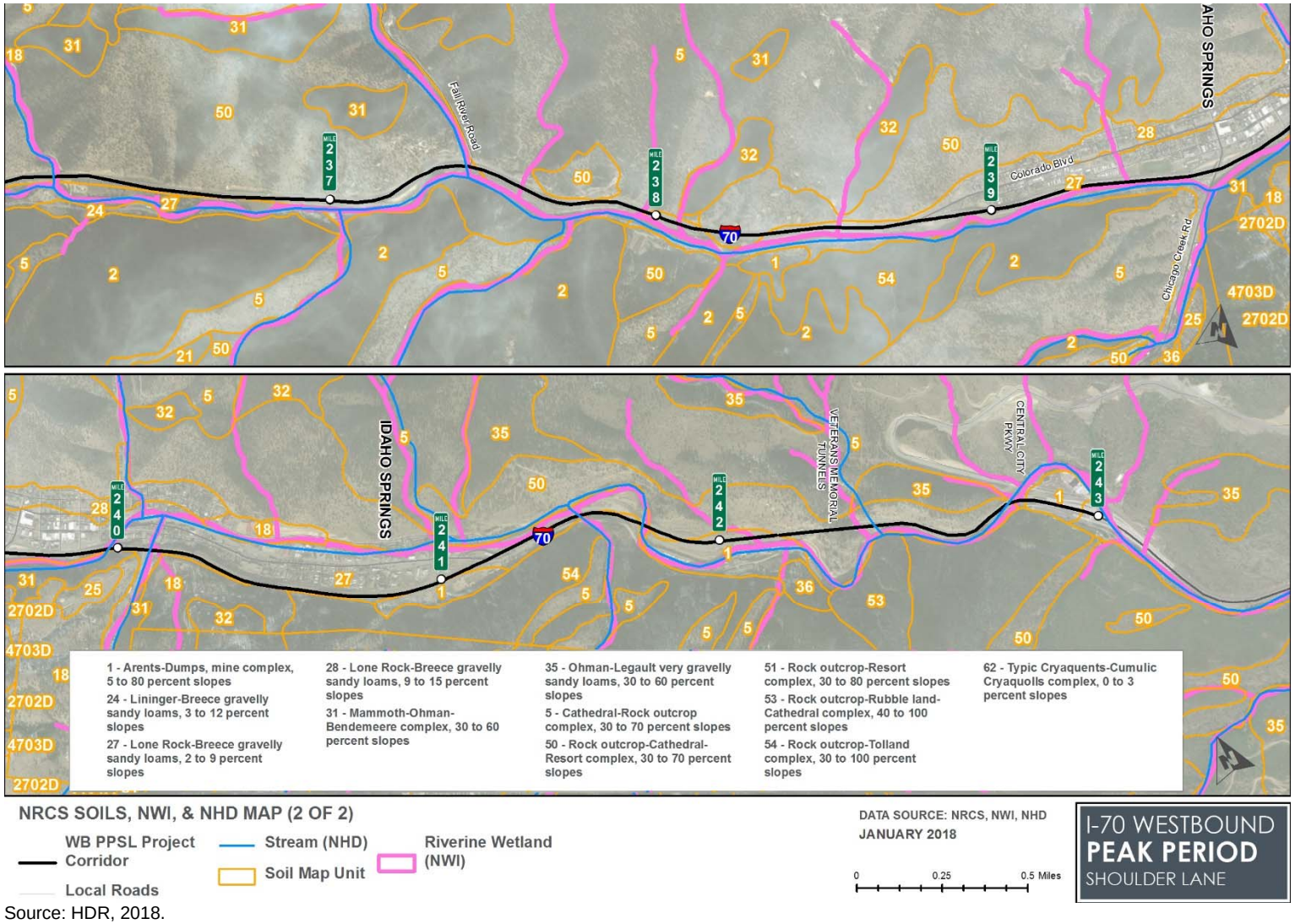

Source: HDR, 2018.

**Figure A-5. NRCS Soils, NWI, and NHD Map**



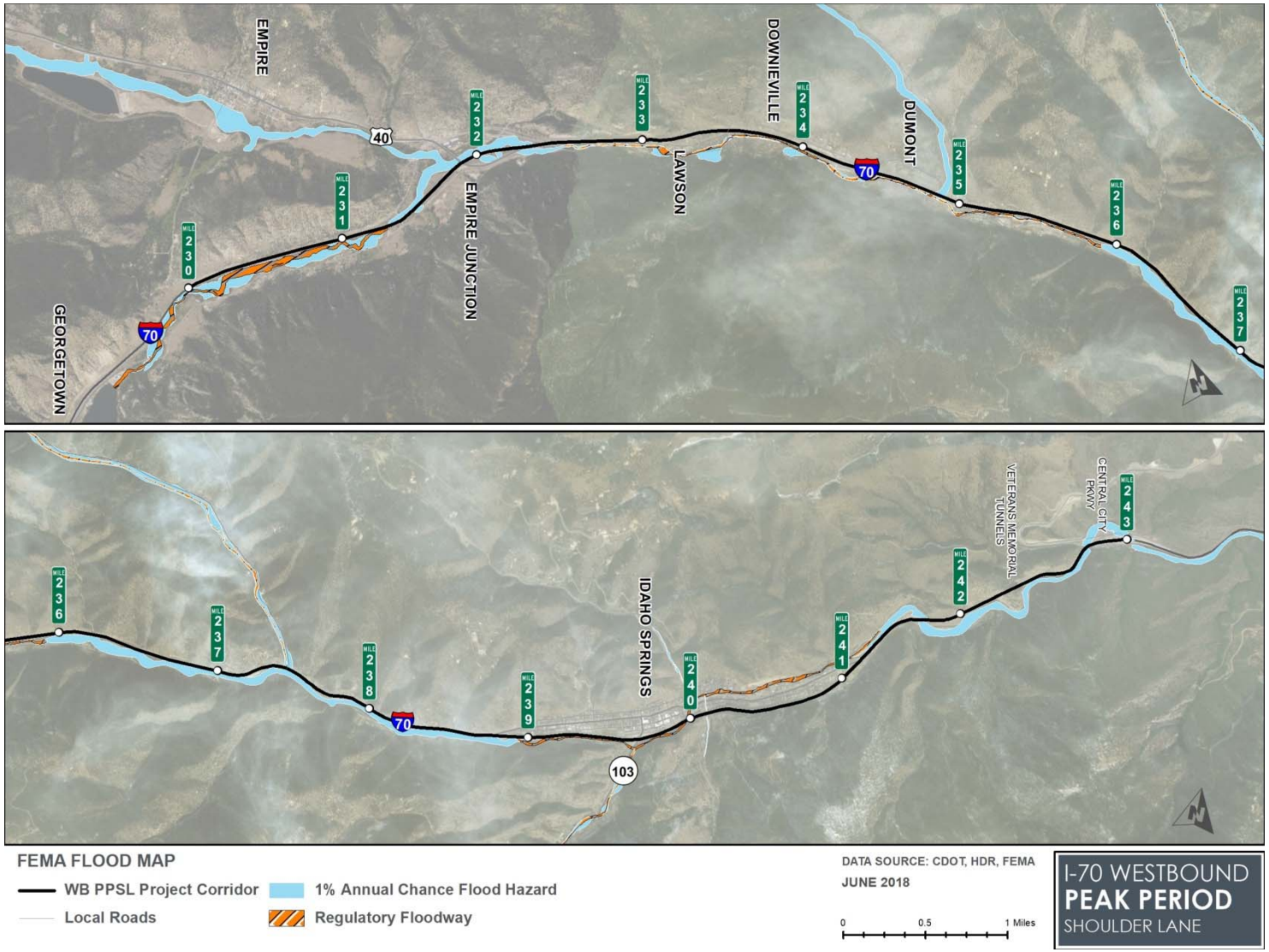

Source: HDR, 2018.

**Figure A-6. NRCS Soils, NWI, and NHD Map**




Source: HDR, 2018.

**Figure A-7. FEMA Flood Map**




Source: HDR, 2018.

Appendix B.

# Representative Photos

1

**Photo 1.** Looking northeast at stream S-1H (i.e., Clear Creek) as it flows east through the study area. Note the bridge over Clear Creek is County Road 308.

**Photo 2.** Looking southwest across the study area in the western portion of the study area. Note westbound I-70 on the left.

**Photo 3.** Looking west on the north side of I-70 in the western portion of the study area. Note the mature floodplain forest on the right, adjacent to Clear Creek and the steep slope separating I-70 from the floodplain.

**Photo 4.** Looking southwest at the study area in the western portion of the study area. Note the bridge in the upper background is US 40.

**Photo 5.** Looking north (downstream) at perennial stream S-1G (i.e., Clear Creek) in the western portion of the study area near MP 232.

**Photo 6.** Looking southeast at perennial stream S-1F (i.e., Clear Creek). Note the large concrete box culvert that conveys water south and under I-70.

**Photo 7.** Looking southeast at perennial stream S-5 (i.e., Mill Creek). Note the riparian vegetation consisting of narrow leaf cottonwood (*Populus angustifolia*) and reed canarygrass (*Phalaris arundinacea*) growing along the fringe of the concrete-lined drainage.

**Photo 8.** Looking east at emergent wetland W-1. The shovel marks the location of wetland data point DP-1. Note I-70 in the right background.

**Photo 9.** Looking north at intermittent stream S-4 (i.e., Spring Gulch) in the middle portion of the study area.

**Photo 10.** Looking north at intermittent stream S-3 (i.e., Georgia Gulch).

**Photo 11.** Looking north at perennial stream S-1D (i.e., Clear Creek) in the town of Idaho Springs.

**Photo 12.** Looking northeast at perennial stream S-1C (i.e., Clear Creek) east of the town of Idaho Springs. Note westbound I-70 on the right.

**Photo 13.** Looking northeast at perennial stream S-1B (i.e., Clear Creek) east of the town of Idaho Springs. Note the I-70 overpass and photo was taken on the western bank of the Creek.

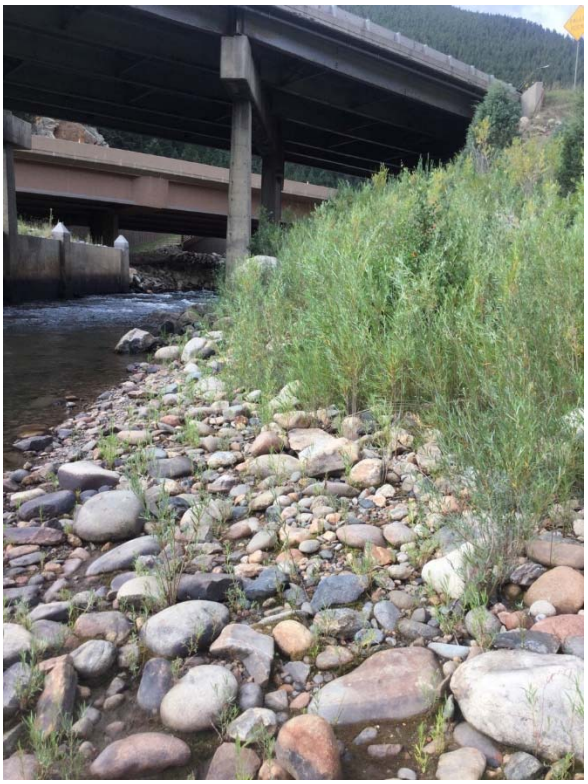


**Photo 14.** Looking northeast at perennial stream S-1A (i.e., Clear Creek) in the eastern portion of the study area. Note the dense willow (*Salix* sp.) riparian habitat on the right.

**Photo 15.** Looking west at the eastern portion of the study area. Note Central City Parkway on the right and I-70 westbound lanes on the left.

**Photo 16.** Looking northeast at stream S-1H (i.e., Clear Creek) as it flows east through the study area. Note the bridge over Clear Creek is County Road 308.

**Photo 17.** Looking southwest across the study area in the western portion of the study area. Note westbound I-70 on the left.

**Photo 18.** Looking west on the north side of I-70 in the western portion of the study area. Note the mature floodplain forest on the right, adjacent to Clear Creek and the steep slope separating I-70 from the floodplain.

**Photo 19.** Looking southwest at the study area in the western portion of the study area. Note the bridge in the upper background is US 40.

**Photo 20.** Looking north (downstream) at perennial stream S-1G (i.e., Clear Creek) in the western portion of the study area near MP 232.

**Photo 21.** Looking southeast at perennial stream S-1F (i.e., Clear Creek). Note the large concrete box culvert that conveys water south and under I-70.

**Photo 22.** Looking southeast at perennial stream S-5 (i.e., Mill Creek). Note the riparian vegetation consisting of narrow leaf cottonwood (Populus angustifolia) and reed canarygrass (Phalaris arundinacea) growing along the fringe of the concrete-lined drainage.

**Photo 23.** Looking east at emergent wetland W-1. The shovel marks the location of wetland data point DP-1. Note I-70 in the right background.

**Photo 24.** Looking north at intermittent stream S-4 (i.e., Spring Gulch) in the middle portion of the study area.

**Photo 25.** Looking north at intermittent stream S-3 (i.e., Georgia Gulch).

**Photo 26.** Looking north at perennial stream S-1D (i.e., Clear Creek) in the town of Idaho Springs.

**Photo 27.** Looking northeast at perennial stream S-1C (i.e., Clear Creek) east of the town of Idaho Springs. Note westbound I-70 on the right.

**Photo 28.** Looking northeast at perennial stream S-1B (i.e., Clear Creek) east of the town of Idaho Springs. Note the I-70 overpass and photo was taken on the western bank of the Creek.

**Photo 29.** Looking northeast at perennial stream S-1A (i.e., Clear Creek) in the eastern portion of the study area. Note the dense willow (Salix sp.) riparian habitat on the right.

**Photo 30.** Looking west at the eastern portion of the study area. Note Central City Parkway on the right and I-70 westbound lanes on the left.

Appendix C.

# Wetland Delineation Data Forms

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Westbound Peak Period Shoulder Lane City/County: Dumont/Clear Creek Sampling Date: 08/23/17

Applicant/Owner: Colorado Dept of Transporation State: CO Sampling Point: DP-1

Investigator(s): Ryan Hammons and Tararae Kent Section, Township, Range: Section 30, 3S, 73W

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 4

Subregion (LRR): E - Rocky Mtn Rng and Frst Lat: 39.7645 Long: -105.6008 Datum: NAD 83

Soil Map Unit Name: Lone Rock-Breece gravelly sandy loams, 9 to 15 percent slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | | | |
|---|---|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes | ☒ | No | ☐ | |
| Hydric Soil Present? | Yes | ☒ | No | ☐ | **Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐ |
| Wetland Hydrology Present? | Yes | ☒ | No | ☐ | |

Remarks: Wetland depression is located between CR 308 and Westbound I-70 in Dumont; east of the Mill Creek concret outfall

## VEGETATION – Use scientific names of plants

| Tree Stratum (Plot size: 30) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 50% = ____, 20% = ____ | 0 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 15) | | | |
| 1. *Rosa woodsii* | 5 | no | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 50% = 2.5, 20% = 1 | 5 | = Total Cover | |
| **Herb Stratum** (Plot size: 5) | | | |
| 1. *Carex aquatilis* | 65 | yes | OBL |
| 2. *Scirpus pendulus* | 30 | yes | OBL |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 50% = 47.5, 20% = 19 | 95 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: 30) | | | |
| 1. | | | |
| 2. | | | |
| 50% = ____, 20% = ____ | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 0

**Dominance Test Worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| | Total % Cover of: | Multiply by: | |
|---|---|---|---|
| OBL species | 95 | x1 = | 95 |
| FACW species | 0 | x2 = | 0 |
| FAC species | 0 | x3 = | 0 |
| FACU species | 5 | x4 = | 20 |
| UPL species | 0 | x5 = | 0 |
| Column Totals: | 100 (A) | | 115 (B) |

Prevalence Index = B/A = 1.15

**Hydrophytic Vegetation Indicators:**

- ☒ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** ☒ **No** ☐

Remarks:

Project Site: Westbound Peak Period Shoulder Lane

## SOIL

Sampling Point: DP-1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 3/1 | 100 | | | | | loamy clay | contains fill material |
| 6-8 | 10YR 2/1 | 90 | 10YR 5/8 | 10 | C | M | loamy clay | contains fill material |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: fill material

Depth (inches): 8

**Hydric Soils Present?** **Yes** ☒ **No** ☐

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface Water Present? | Yes | ☐ | No | ☒ | Depth (inches): | |
| Water Table Present? | Yes | ☐ | No | ☒ | Depth (inches): | |
| Saturation Present? (includes capillary fringe) | Yes | ☐ | No | ☒ | Depth (inches): | |

**Wetland Hydrology Present?** **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Passes the FAC-Neutral test 2:1

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Westbound Peak Period Shoulder Lane City/County: Dumont/Clear Creek Sampling Date: 08/23/17

Applicant/Owner: Colorado Dept of Transporation State: CO Sampling Point: DP-2

Investigator(s): Ryan Hammons and Tararae Kent Section, Township, Range: Section 30, 3S, 73W

Landform (hillslope, terrace, etc.): hillslope/roadside Local relief (concave, convex, none): convex Slope (%): 2-4

Subregion (LRR): E - Rocky Mtn Rnge and Frst Lat: 39.7645 Long: -105.6009 Datum: NAD 83

Soil Map Unit Name: Lone Rock-Breece gravelly sandy loams, 9 to 15 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | | |
|---|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ☐ | No ☒ | **Is the Sampled Area within a Wetland?** | **Yes ☐ No ☒** |
| Hydric Soil Present? | Yes ☐ | No ☒ | | |
| Wetland Hydrology Present? | Yes ☐ | No ☒ | | |

Remarks: Upland point is south of the wetland datapoint between wetland and I-70

## VEGETATION – Use scientific names of plants

| Tree Stratum (Plot size: 30) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 50% = ____, 20% = ____ | 0 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 15) | | | |
| 1. *Rosa woodsii* | 5 | yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 50% = 2.5, 20% = 1 | 5 | = Total Cover | |
| **Herb Stratum** (Plot size: 5) | | | |
| 1. *Bromus inermis* | 40 | yes | FAC |
| 2. *Pascopyrum smithii* | 40 | yes | FACU |
| 3. *Centaurea pratensis* | 5 | no | NL (UPL) |
| 4. *Artemisia ludoviciana* | 5 | no | FACU |
| 5. *Achillea millefolium* | 1 | no | FACU |
| 6. *Medicago sativa* | 1 | no | UPL |
| 7. *Grindelia squarrosa* | 1 | no | FACU |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 50% = 46.5, 20% = 18.6 | 93 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: 30 ) | | | |
| 1. | | | |
| 2. | | | |
| 50% = ____, 20% = ____ | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 7

**Dominance Test Worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | 1 | (A) |
| Total Number of Dominant Species Across All Strata: | 2 | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | 50 | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x1 = | 0 |
| FACW species | 0 | x2 = | 0 |
| FAC species | 40 | x3 = | 120 |
| FACU species | 52 | x4 = | 208 |
| UPL species | 6 | x5 = | 30 |
| Column Totals: | 98 (A) | | 358 (B) |

Prevalence Index = B/A = 3.65

**Hydrophytic Vegetation Indicators:**

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ☐ No ☒

Remarks:

Project Site: Westbound Peak Period Shoulder Lane

## SOIL

Sampling Point: DP-2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 2/1 | 70 | | | | | sandy loam | mixed with fill material |
| | 10 YR 5/6 | 30 | | | | | sandy loam | mixed with fill material |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
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- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: fill material

Depth (inches): 6

**Hydric Soils Present?** **Yes** ☐ **No** ☒

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
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- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
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- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes | ☐ | No | ☒ | Depth (inches): |
| Water Table Present? | Yes | ☐ | No | ☒ | Depth (inches): |
| Saturation Present? (includes capillary fringe) | Yes | ☐ | No | ☒ | Depth (inches): |

**Wetland Hydrology Present?** **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Fails FAC-neutral test, 0:2