

US 6 Bridges Design Build Project

BR 0061-083

Sub Account Number 18838 (CN)

Biological Resources Report

Prepared for:
Colorado Department of Transportation
Federal Highway Administration

Prepared by:

**PARSONS
BRINCKERHOFF**



November 2012

Contents

1.	PROJECT BACKGROUND	1
1.1	The Valley Highway Project	1
1.2	US 6 Bridges Design Build Project	3
1.3	Relationship of the Valley Highway Project and the US 6 Bridges Design Build Project	5
1.3.1	Phasing of the FEIS Preferred Alternative.....	5
1.3.2	Additional Project Elements in the Project.....	5
2.	EXISTING CONDITIONS AND PROJECT IMPACTS	8
2.1	Vegetation.....	10
2.1.1	Colorado Vegetation Classification Project (CVCP).....	10
2.1.2	Existing Vegetation	11
2.1.3	Senate Bill 40 Resources	12
2.1.4	Upland Tree Resources	14
2.1.5	Noxious Weeds	16
2.2	Wetland Resources	21
2.2.1	Wetland Impacts.....	22
2.3	Wildlife.....	25
2.3.1	Mammals	25
2.3.2	Birds	26
2.3.3	Fish, Reptiles and Amphibians	26
2.4	Migratory Birds and Raptors.....	26
2.5	Threatened and Endangered Species	30
2.5.1	Common Garter Snake.....	32
2.5.2	Northern Leopard Frog	32
2.5.3	Impacts to State Sensitive Species.....	33
3.	CONCLUSIONS	33
4.	REFERENCES	43

Figures

Figure 1: I-25 Valley Highway Project Preferred Alternative	2
Figure 2: Project	4
Figure 3: FEIS Phased Implementation of the Preferred Alternative	6
Figure 4: Project Study Area	9
Figure 5: Senate Bill 40 Trees	13
Figure 6: Upland Tree Resources	15
Figure 7: Noxious Weeds in the Project Area	19
Figure 8: 2004 Delineated Wetlands near the Project Area	23
Figure 9: 2011 Delineated Wetlands near the Project Area	24
Figure 10: Bird Nests in the Project Area	29
Table 4. Summary of Previously and Currently Identified Biological Resource Impacts and Mitigation	35

Tables

Table 1. Land Cover Types in the Project Area	10
Table 2. Noxious Weeds Present in the Project Area	17
Table 3. Threatened & Endangered Species, Federal Candidate (FC) Species, and State Species of Concern (SC) Found within the City and County of Denver	31

List of Abbreviated Terms

AE	American Elm
As	Arsenic
BGEPA	Bald and Golden Eagle Protection Act
BRR	Biological Resources Report
CCD	City and County of Denver
CDOT	Colorado Department of Transportation
CDOW	Colorado Division of Wildlife
CDPW	Colorado Division of Parks and Wildlife
CDPHE	Colorado Department of Public Health & Environment
CRS	Colorado Revised Statute
CVCP	Colorado Vegetation Classification Project
CT	Canada Thistle
CWA	Clean Water Act
DBH	Diameter at Breast Height
EIS	Environmental Impact Statement
FACWet	Functional Assessment of Colorado Wetlands
FB	Field Bindweed
FC	Federal Canidate Species
FHU	Felsburg Holt & Ullevig
FHWA	Federal Highway Administration
GIS	Geographic Information System
GPS	Global Positioning System
I-25	Interstate Highway 25
JG	Jointed Goatgrass
MBTA	Migratory Bird Treaty Act
NDIS	Natural Diversity Information Source
NEPA	National Environmental Policy Act
OHWM	Ordinary High Water Mark
PB	Parsons Brinckerhoff, Inc.
PBA	Programmatic Biological Assessment
PC	Plains Cottonwood
PV	Puncture Vine
ROD	Record of Decision
ROD2	Record of Decision 2
ROW	Right-of-Way
RTP	Regional Transportation Plan
SB	southbound
SB 40	Colorado Senate Bill 40
SC	State Species of Special Concern
SP-WRAP	South Platte Water Related Activities Program
ST	Scotch Thistle
T & E	Threatened & Endangered
TMDL	Total Maximum Daily Load
US 6	US Highway 6
USACE	US Army Corps of Engineers
USEPA	US Environmental Protection Agency

USFWS
WB
WUS

US Department of Interior Fish and Wildlife Service
westbound
Waters of the US

1. PROJECT BACKGROUND

The Project includes modifications to the roadway, interchanges, and bridges along 6th Avenue (US 6) between Sheridan Boulevard and the BNSF Railway in Denver, Colorado. The Colorado Department of Transportation (CDOT) is preparing a Reevaluation and Record of Decision (ROD2) to document the impacts of and mitigation for the Project.

1.1 The Valley Highway Project

The Federal Highway Administration (FHWA) and CDOT prepared a Final Environmental Impact Statement (FEIS) in 2006 and a ROD in 2007 for the Interstate 25 (I-25) Valley Highway Project, located in Denver, Colorado. The Valley Highway Project includes the reconstruction of I-25 and reconfiguration of interchanges from Logan Street to United States Highway (US) 6, US 6 from I-25 to Federal Boulevard, and the crossing of Santa Fe Drive and Kalamath Street at the Consolidated Main Line railroad. The Preferred Alternative, as described in the FEIS, includes the following elements:

- I-25 Mainline: Widening of I-25 to provide a consistent section with four through lanes plus auxiliary lanes in each direction throughout the project area
- I-25/Broadway: Tight diamond interchange
- I-25/Santa Fe Drive: Single point urban interchange with a flyover ramp for northbound Santa Fe Drive to northbound I-25
- I-25/Alameda/Santa Fe/Kalamath: Offset partial urban interchange at I-25 and Alameda Avenue; Santa Fe Drive and Kalamath Street grade separated under the railroad close to their current alignments
- US 6: Ramp improvements at the I-25/US 6 interchange; closure of the Bryant Street interchange; diamond interchange at US 6/Federal Boulevard with slip ramps to Bryant Street and a braided ramp from Federal Boulevard to eastbound US 6; reconstruction of US 6 with collector-distributor roads/auxiliary lanes throughout the project area

The Preferred Alternative of the Valley Highway Project is shown in Figure 1.



Figure 1: I-25 Valley Highway Project Preferred Alternative

1.2 US 6 Bridges Design Build Project

The Project includes the reconstruction of US 6, reconfiguration of interchanges from Federal Boulevard to I-25, and replacement of the US 6 bridges from Federal Boulevard to the bridge over the BNSF Railway. More specifically, the Project includes the following elements:

- The replacement of five bridges along US 6: Federal Boulevard, Bryant Street, South Platte River, I-25, and BNSF Railway. Three of these bridges are in poor condition and the other two are functionally obsolete. The project would also add a tunnel immediately east of I-25 under US 6 to separate traffic on northbound I-25 from traffic exiting the interstate to travel east and west on US 6.
- Ramp improvements at the I-25/US 6 interchange, closure of the westbound (WB) US 6 to Bryant Street ramp, a diamond interchange at US 6/Federal Boulevard with slip ramps to Bryant Street, and a braided ramp from Federal Boulevard to eastbound (EB) US 6.
- Reconstruction of US 6 with collector-distributor roads/auxiliary lanes from Federal Boulevard to the BNSF Railway bridge structure
- Conversion of 5th Avenue to two-way traffic from Federal Boulevard to Decatur Street
- Widening of Federal Boulevard, from five to six lanes, from 5th to 7th Avenues to accommodate current and future improvements
- Pavement resurfacing of US 6 from Knox Boulevard to Sheridan Boulevard
- In-kind replacement of impacted facilities for Barnum East Park
- A bicycle/pedestrian bridge structure over US 6, connecting Barnum North Park and Barnum Park (also known as Barnum Park South, and herein referred to as Barnum Park South)
- Upgrading portions of the South Platte River Trail to current standards

Figure 2 shows the Project.

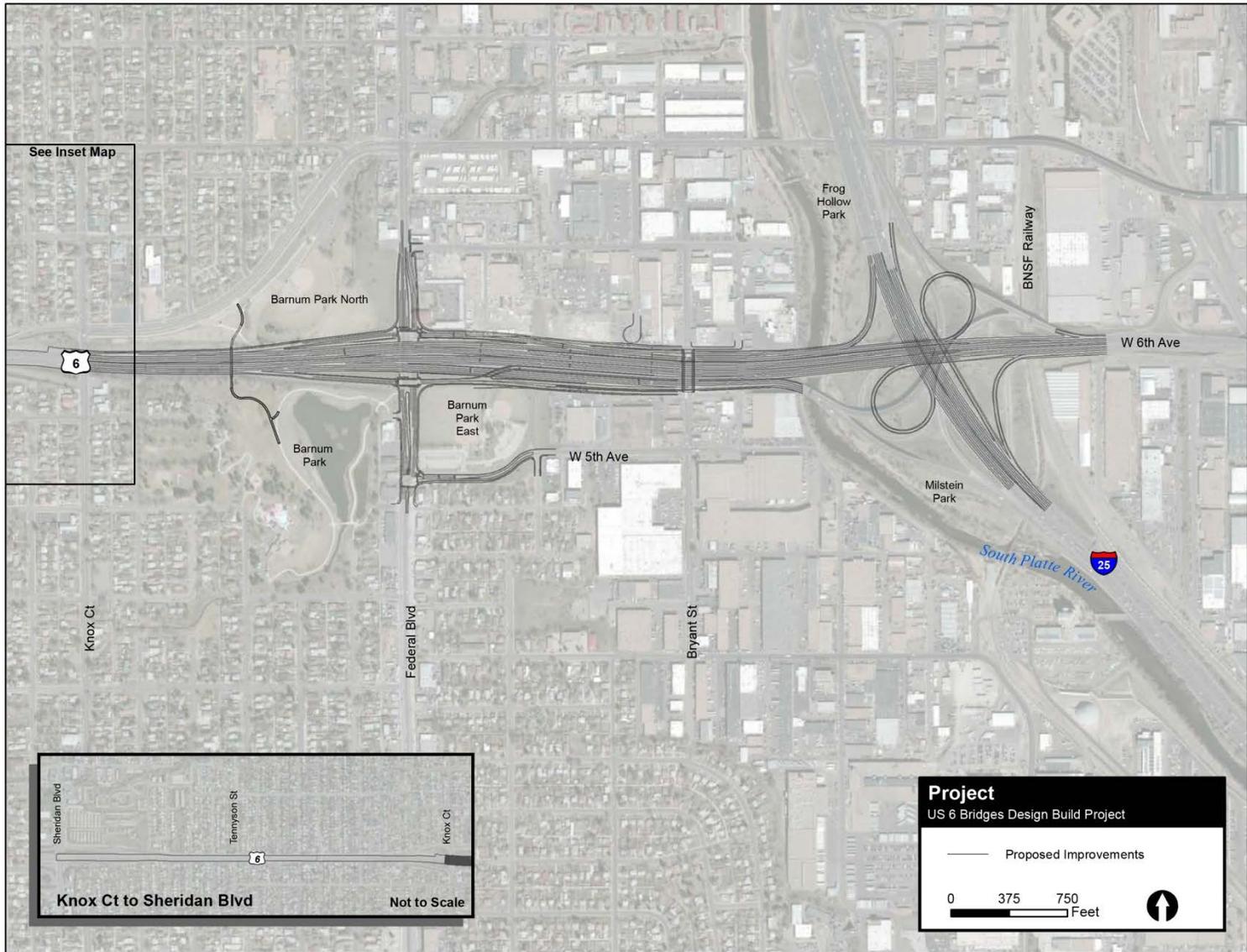


Figure 2: Project

1.3 Relationship of the Valley Highway Project and the US 6 Bridges Design Build Project

At the time of the FEIS, funding had not been identified for the entire Preferred Alternative. Although budget placeholders were included in the 2030 Regional Transportation Plan (RTP), these budgets fell short of the estimated cost of the Preferred Alternative. Therefore, FHWA and CDOT planned for a phased implementation of the Preferred Alternative. These six phases are outlined in Chapter 7 of the FEIS. The ROD2 for the Project will reevaluate part of Phase 1 (the part including the US 6/Federal Boulevard interchange) as presented in the 2007 ROD, and provide a decision for Phase 5 of the Valley Highway Project. The ROD2 for the Project will also address six new, minor project elements, which were not part of the FEIS. Due to the minor environmental significance and nature of these additional components, they are included in the ROD2 and will not affect the independent utility, logical termini, or Preferred Alternative of the Valley Highway Project.

1.3.1 Phasing of the FEIS Preferred Alternative

The Project includes elements of two of the six construction phases—Phase 1 and Phase 5—from the Valley Highway Project. A decision on construction Phase 1 of the Valley Highway Project, which included the US 6/Federal Boulevard bridge and ramps, excluding the braided ramp, was made in the 2007 ROD. Figure 3 shows the phases of the Valley Highway Project’s Preferred Alternative and Figure 4 shows the Project Elements and how they relate to the FEIS phasing.

1.3.2 Additional Project Elements in the Project

At this time, the Project includes six additional elements that were not included in the FEIS or 2007 ROD:

- Reconstruction of the southbound (SB) I-25 to EB US 6 ramp;
- A bicycle/pedestrian bridge structure over US 6, connecting Barnum North and Barnum South parks;
- Replacement of the US 6 bridge over Bryant Street;
- Replacement of the US 6 bridge over I-25;
- Replacement of the US 6 bridge over the BNSF Railway; and
- Pavement resurfacing of US 6 between Sheridan Boulevard and Knox Court

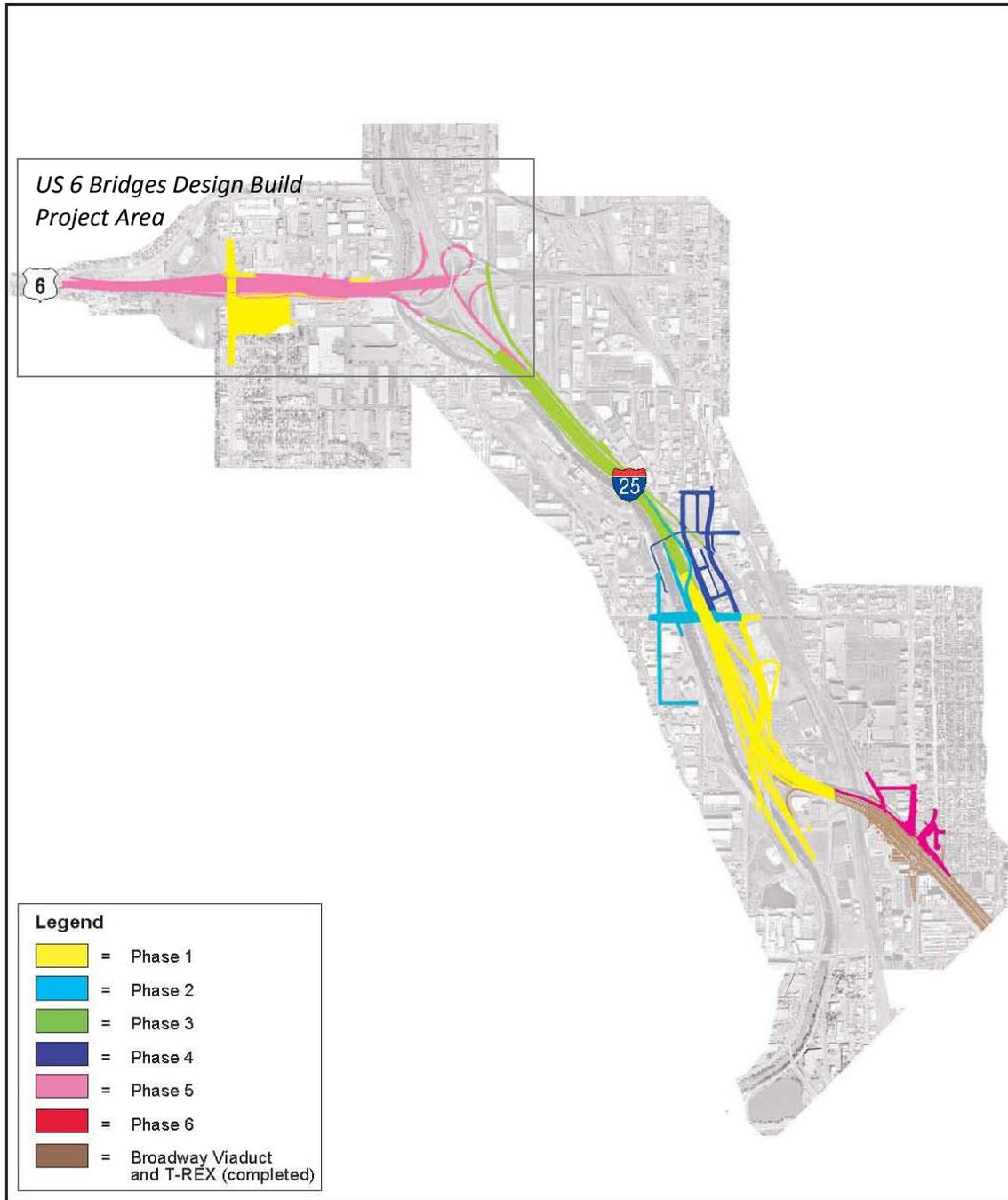


Figure 3: FEIS Phased Implementation of the Preferred Alternative

(source: I-25 Valley Highway FEIS)

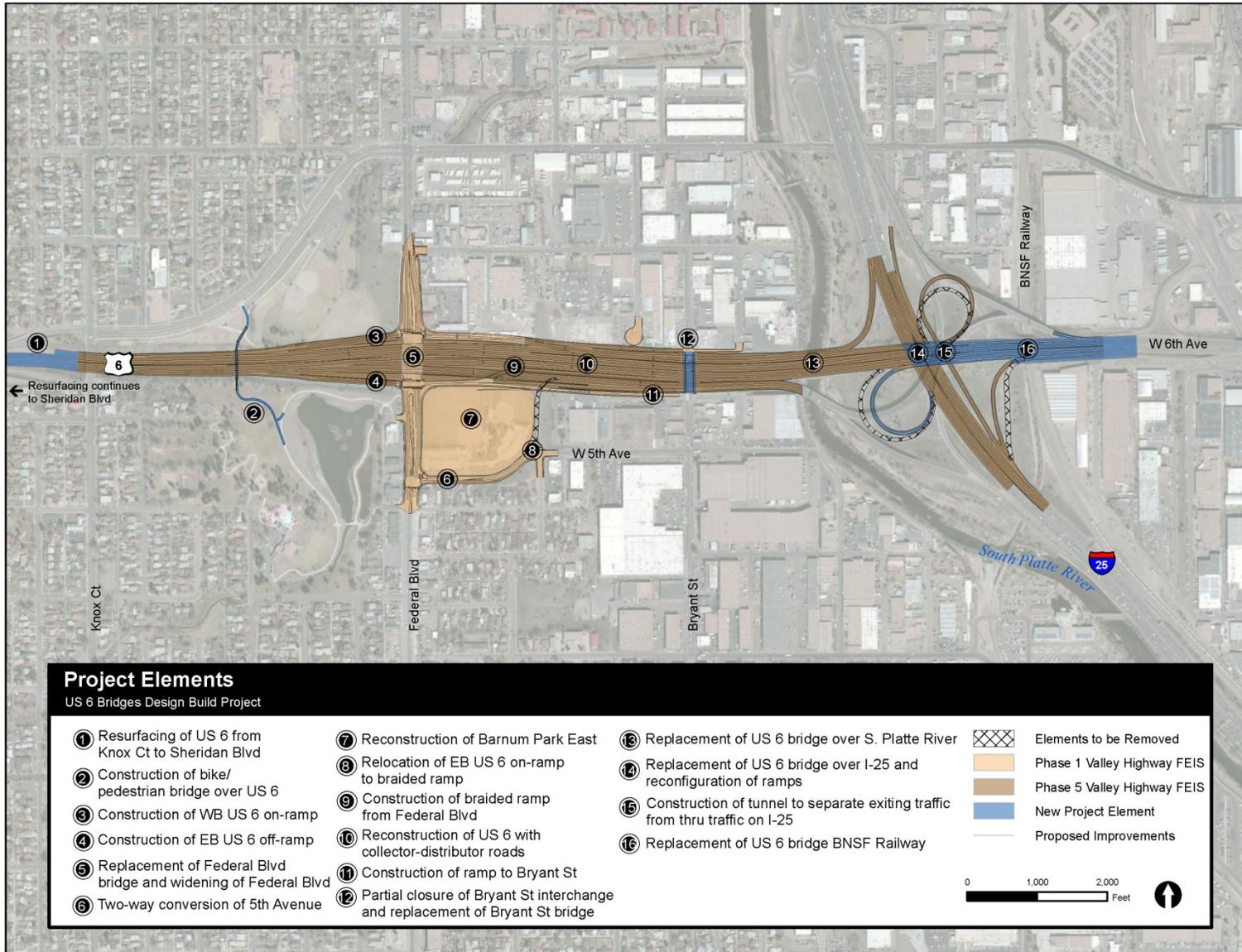


Figure 4: Project Elements

2. EXISTING CONDITIONS AND PROJECT IMPACTS

The National Environmental Policy Act (NEPA) of 1969 established a mandate for federal agencies to consider the potential environmental consequences of their proposed actions, to document the analysis, and to make the information available to the public. In accordance with NEPA and related regulations, CDOT has prepared this Biological Resources Report (BRR) for the Project. The BRR Project Area is limited to the area defined in the Project Area. This area includes existing CDOT right-of-way (ROW) adjacent to the Project Area and small slivers of ROW to be acquired as part of the Project at the US 6 and Federal Boulevard interchange. This document evaluates the ecological conditions of the site and the anticipated impacts. The resources discussed in this report include: vegetation, noxious weeds, wetlands, wildlife, migratory birds, and Senate Bill 40 (SB 40) resources.

The information presented in this report is based upon surveys conducted by Felsburg Holt & Ullevig (FHU), in support of the Biological Resources Report (BRR) for the US 6 Bridge Reconstruction: Bryant Street, S. Platte River and I-25 Project. Surveys by Wilson & Company supported a 2011 Biological Review memorandum, summarizing the natural environment in the area of US 6 over the BNSF Railway bridge. Additionally, FHU composed the Vegetation and Wildlife Sections for the Valley Highway Project as provided in the 2006 Environmental Impact Statement (EIS) and 2007 Record of Decision (ROD). The purposes of these biological reviews were in support of US 6 Bridge Project, which is part of the overall Valley Highway Project. This document addresses the biological resources found within the Project Area (Figure 5).

Due to the initial scope of the Project, site visits were conducted by three different firms for the Project Area. Therefore, the information presented in this report is based upon field visits in October 2011 by Alex Pulley, Kevin Maddoux, and Keith Hidalgo (Environmental Scientists), from Felsburg, Holt and Ullevig (FHU) and Tom Roberts (Landscape Architect) from Parsons Brinckerhoff, Inc. (PB). In September 2011, Robert Belford (Biologist) of Wilson & Company, conducted a site visit of the vicinity of the BNSF bridge, which falls within the overall Project Area. A memo summarizing any resources at this location was prepared by Wilson & Company and referenced throughout this Biological Resources Technical Report for the overall US 6 Design Build Project (**Appendix 3**). Additional surveys were conducted in May 2012 by Keith Hidalgo and Jake Lloyd (Landscape Architect) with FHU to expand the survey area. Hillary Seminick (Environmental Scientist, PB) conducted an additional tree survey to cover the area to the east of the BNSF bridge that was not provided by Wilson & Company. The majority of the species observed are plant species easily identified late in the growing season and therefore should not be considered comprehensive.

The Project Area is located in the City and County of Denver (CCD), Colorado, at approximately 5,210 feet above sea level. The Project Area is in the flat to rolling plains area of the High Plains Ecoregion. This ecoregion (US Environmental Protection Agency [USEPA] 2003) is described as:

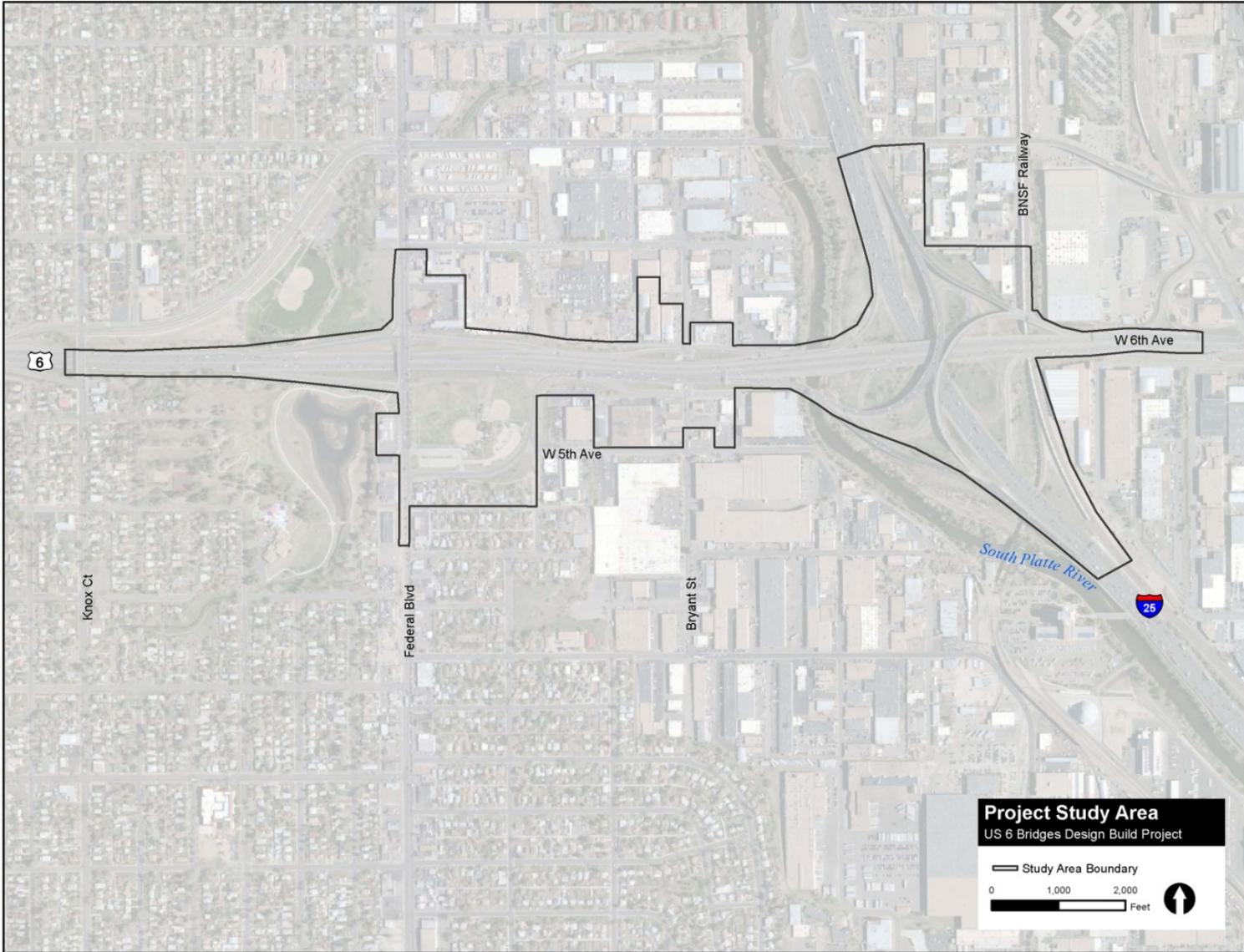


Figure 5: Project Study Area

Higher and drier than the Central Great Plains to the east, and in contrast to the irregular, mostly grassland or grazing land of the Northwestern Great Plains, much of the Western High Plains comprises smooth to slightly irregular plains having a high percentage of cropland. Grama-buffalo grass is the potential natural vegetation in this region as compared to mostly wheatgrass-needlegrass to the north, Trans-Pecos shrub savanna to the south, and taller grasses to the east. The northern boundary of this ecological region is also the approximate northern limit of winter wheat and sorghum and the southern limit of spring wheat. (USEPA 2003)

Generally, the Project Area lies within a high density urban area that does not have the natural characteristics described above. Much of the area immediately surrounding the Project Area is occupied by light industrial uses such as railroad tracks, industrial buildings, and commercial buildings. All of these locations contain extensive parking lots. There are other immediately adjacent areas that are part of the CCD’s parks and open space system. The Project is associated with a major highway interchange in the middle of Denver, Colorado. The South Platte River flows south to north through the Project and passes underneath one of the project US 6 bridges. The natural vegetation in the Project Area consists primarily of native and non-native grasses, weedy forbs, shrubs, and trees on either side of the South Platte River.

The Project Area lies within the South Platte River-Little Dry Creek to Lakewood Gulch watershed, part of the South Platte River Basin, in the 6th level Hydrologic Unit Code (101900020908). The South Platte River (COSPUS14) currently is on the Colorado Department of Public Health and Environment’s (CDPHE) 303(d) list and has high priority stream impairment for arsenic (As) (CDPHE 2010). If a stream segment is on the 303(d) list, the segment requires the development of a total maximum daily load (TMDL). TMDL is a term that represents the total amount of a pollutant that a water body can assimilate and still meet standards. This segment of the South Platte River has two TMDLs: one for Escherichia coli (E. coli) and one for nitrate. Currently, a TMDL has not been developed for Arsenic.

2.1 Vegetation

2.1.1 Colorado Vegetation Classification Project (CVCP)

Based on a review of the Natural Diversity Information Source (NDIS) Colorado Vegetation Classification Project (CVCP), seven land cover types are identified in the Project Area and are listed in Table 1, and briefly discussed below. Photographs of the Project Area can be found in **Appendix 1**.

Table 1. Land Cover Types in the Project Area

Land Cover Type ¹	Area (acres)	Percent of Project Area
Barren Land	2.75	2.20%
Commercial	75.01	59.95%
Cottonwood	0.77	.63%
Grass Dominated	11.00	9.01%
Grass/Forb Mix	2.26	1.81%

Land Cover Type ¹	Area (acres)	Percent of Project Area
Residential	22.39	18.34%
Urban / Built Up	1.48	1.21%
Water	6.44	5.27%
Total	122.08	100.00%

¹ All cover types correspond to those in the CVCP (NDIS 2010).

The majority of vegetation present in the Project Area is non-native and/or landscaped species, except for the banks of the South Platte River which contain a mixture of native and non-native vegetation. Generally, the Commercial, Residential, and Urban/Built Up cover types primarily consist of various ornamental woody and herbaceous species including Russian olive (*Elaeagnus angustifolia*), Siberian elm (*Ulmus pumila*), smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), and common dandelion (*Taraxacum officinale*) plants. This vegetation is relatively low quality because of the lack of maintenance or irrigation.

Cottonwood cover type is dominated by various cottonwood species such as narrowleaf cottonwood (*Populus angustifolia*) and plains cottonwood (*Populus deltoides*).

The Grass Dominated Rangeland cover type characterization is identified as an area dominated by annual and perennial grasses. Examples include Kentucky bluegrass, smooth brome, western wheatgrass (*Pascopyrum smithii*), and needle and thread grass (*Hesperostipa comate*).

The Grass/Forb Rangeland cover type is characterized by perennial and annual grasslands. Low elevation (< 6,000') species include Blue Grama (*Bouteloua gracilis*), Needle & Thread, Sand Drop Seed (*Sporobolus cryptandrus*), and brome species (*Bromus spp.*).

The Water cover type characterizes lakes, streams and rivers. The South Platte River and Barnum Park Lake primarily make up this cover type.

The field visits provided an opportunity to verify the CVCP data. Using the CVCP's vegetation categories, FHU identified that the Commercial and Water categories are the most accurate cover types within the Project Area.

2.1.2 Existing Vegetation

Most areas of the ROW within the Project Area contain grasses and weedy forbs with many trees lining the banks of the South Platte River. Most of the grasses are non-native species, the majority of which is downy brome (*Bromus tectorum*) along with other grasses and weedy forbs, mainly field bindweed (*Convolvulus arvensis*) (**Appendix 2**). The habitat adjacent to the South Platte River is relatively moderate when compared to a pristine riparian habitat, due to the presence of sandbar willow (*Salix exigua*), Emory's sedge (*Carex emoryi*), and other sedges (*Carex spp.*). In all other areas the habitat is degraded and dominated by non-native species.

This river corridor has been heavily developed and modified from its natural setting and has limited ecological value when compared to more pristine habitats with little to no man-made development. The

South Platte River has been channelized through the Project Area due to development within the floodplain.

2.1.3 Senate Bill 40 Resources

Senate Bill 40 (SB 40) is statutory and requires agents of the state to obtain a certification from the Colorado Department of Natural Resources – Division and Parks and Wildlife (CDPW) when a project meets one or more of 10 criteria including impacts to “...any stream or its bank or tributaries...” (33-5-101-107, CRS 1973 as amended; CDOW & CDOT 2003). Because of the presence of the South Platte River in the Project Area, a SB 40 Wildlife Certification is needed for this the Project for impacts to SB 40 trees within the riparian area of the South Platte River.

SB 40 shrub areas were limited to those areas that were previously delineated as wetlands in the Valley Highway EIS. No new SB 40 shrub areas were delineated. Where SB 40 shrubs exist (sandbar willow in most areas along the South Platte River) permitting under Section 404 of the Clean Water Act takes precedence so as not to double count SB 40 shrubs where mitigation is required by CDOT. A formal application for SB 40 Wildlife Certification shall be made by CDOT 60 days prior to construction activities.

The SB 40 tree species identified during the field visits are shown in Figure 6 and in **Appendix 2**. This is based on the proximity to the South Platte River and the size of the tree (SB 40 trees are at least 2 inches diameter-breast-height [dbh]).

Of these trees, a total of 169 SB 40 trees were identified within the Project Area. SB 40 trees which are removed as a result of this the Project will be replaced at a 1:1 ratio within the South Platte riparian corridor.



Figure 6: Senate Bill 40 Trees

2.1.4 Upland Tree Resources

CDOT Region 6 mitigates for the removal of both native and non-native trees greater than four inches DBH. Trees greater or equal to this threshold were inventoried and data was collected with sub-meter accuracy Trimble GeoHX GPS units within the Project Area. A total of 750 trees were identified within the Project Area. As seen in the site photos, these trees include groups of American elm (*Ulmus americana*), Siberian elm, plains cottonwood (*Populus deltoides*), box elder (*Acer negundo*), and Ailanthus tree of heaven (*Ailanthus altissima*) trees. There are numerous trees located within the roadway ROW that will be affected by this project. Based on current design and grading plans, the Project will remove 169 upland trees. These trees, shown in Figure 7, will be replaced with native species at a 1:1 ratio in accordance to CDOT Region 6 policy.

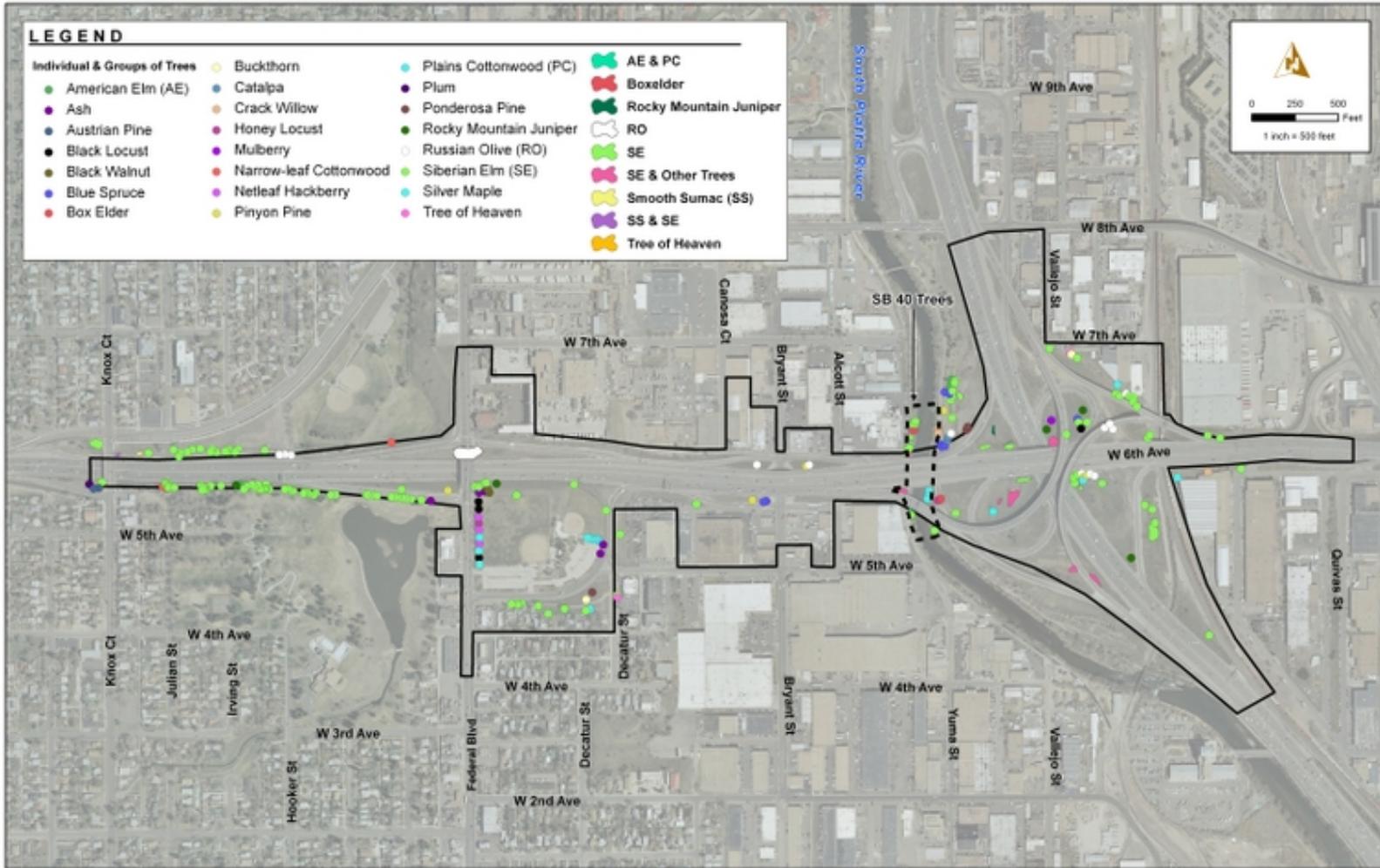


Figure 7: Upland Tree Resources

2.1.5 Noxious Weeds

The Colorado Noxious Weed Act requires the control of the 71 plant species designated as noxious weeds. According to the Colorado Department of Agriculture, noxious weeds are plants that reduce agricultural productivity, lower real estate values, endanger human health and well-being, and damage scenic values (CDA 2010). The state has divided the 71 noxious weeds into three groups: Lists A, B, and C.

List A includes 18 plant species that have very limited to no distribution in Colorado and are designated for immediate eradication. List B includes 39 species that are locally common but are managed to stop continued spreading. List C includes 14 species that are generally widespread and are not managed to stop spreading but to provide additional education research, and biological control.

An Integrated Noxious Weed Management Program will be included with the construction Contract and is intended to comply with the following regulations and guidelines:

- Colorado Department of Agriculture, Plant Industry Division, Colorado Noxious Weed Act, 35-5.5-101 119, Colorado Revised Statutes (CRS) (2003)
- Federal Executive Order 13112 Invasive Species
- Federal Highway Administration (FHWA) Guidance on Invasive Species (FHWA 1999)
- Template and Guidance for the Preparation of an Integrated Noxious Weed Management Plan for CDOT Region 6 Planning and Environment (CDOT 2006b)
- City and County of Denver Noxious Weed Management Plan (CCD 2011)
- Colorado Department of Agriculture, Plant Industry Division, Colorado Weed Free Forage Crop Certification Act, Title 35, Article 27.5 (CRS 2011)

This section includes a noxious weed inventory and description of preventative and control measures that will be implemented during the construction of the project. The noxious weeds considered in this management plan include those managed by CCD and the State of Colorado.

A total of eight plant species designated as noxious weeds by the State of Colorado were found in the Project Area, including five "List B" species and three "List C" species. No "List A" species were found. All of the noxious weeds found in the Project Area are listed in Table 2 along with their listing status, including the the Colorado Department of Agriculture Division of Plant Industry list (CDA 2003), CCD list (CCD 2011), and the CDOT Noxious Weed List (CDOT 2006).

Noxious weeds were surveyed for in October 2011 and in May 2012 by FHU staff using a Trimble® GeoXH™ global positioning system (GPS) with ESRI® ArcPad™ version 10.0 mobile geographic information system (GIS). The Project Area contained scattered populations of noxious weeds and in some areas, individual plants. Staff delineated noxious weed populations greater than 5 percent ground cover throughout the Project Area; these mapped areas can be found in Figure 8. The period of the survey and maintenance activities, such as mowing, within the Project Area ROW created occasional challenges in vegetation identification.

All eight of these species are found throughout the infields and in open, native seeding areas throughout the interchange. Photographs 7, 8, and 12 included in **Appendix 1** illustrate the typical site conditions in CDOT’s ROW at the time of the field review.

According to the 2011 BNSF Biological Review Memo provided by Wilson & Company (**Appendix 3**), no noxious weed species were found around in the vicinity of the BNSF Bridge.

Table 2. Noxious Weeds Present in the Project Area

Common Name	Scientific Name	CDA: List A, B, or C	CCD	CDOT	Density
Canada Thistle	<i>Cersium arvense</i>	B	X	X	Scattered
Jointed Goatgrass	<i>Aegilops cylindrical</i>	B		X	Uncommon
Leafy Spurge	<i>Euphorbia esula</i>	B	X	X	Common
Russian Olive	<i>Elaeagnus angustifolia</i>	B		X	Scattered
Scotch Thistle	<i>Onopordum acanthium</i>	B	X	X	Uncommon
Downy Brome	<i>Bromus tectorum</i>	C			Common
Field Bindweed	<i>Convolvulus arvensis</i>	C			Common
Puncture Vine	<i>Tribulus terrestris</i>	C			Scattered

Source: CDA 2010

In order to effectively manage noxious weeds, management actions must be implemented in accordance with specific goals and priorities. The goal of this plan is to maintain and improve the health of the ecosystem in the Project Area by avoiding additional spreading of noxious weeds as a result of project construction.

Noxious weed management objectives are intended to support the overall management goal of maintaining the health of the ecosystem. There are two main management objectives and they include:

- Preventing the establishment of new noxious weed populations in the Project Area as a result of project construction.
- Preventing the continued spreading of noxious weeds in the Project Area as a result of project construction.

These objectives will generally be met by implementing the following actions at the project site:

- Follow CDOT Standard Specifications for Road and Bridge Construction controls during the construction of the Project (CDOT 2011), including 217 Herbicide Treatment.
- Pre-treat all noxious weed populations in areas where topsoil salvage is planned with proper herbicides based on a Project Special Specification 217.

- Minimize ground disturbance and promptly stabilize any exposed soil to prevent weed establishment.
- Properly revegetate all disturbed areas with the native seeding plan recommended by the CDOT Region 6 Landscape Architect.
- Implementation of the Integrated Noxious Weed Management Plan found in **Appendix 5**.

Revegetated areas will be monitored for success. If treatments for future weed infestations are required, coordination between the contractor and the CDOT Region 6 Environmental Staff must occur.

2.2 Wetland Resources

In 1977, the US Congress passed the Clean Water Act (CWA) to protect the quality of waters of the US, including adjacent wetlands. Section 404 of the CWA defines Waters of the US (WUS) as all traditional navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. The US Army Corps of Engineers (USACE) Regulatory Program administers and the USEPA enforces Section 404 of the CWA.

The definition of WUS under USACE jurisdiction does not include wetlands that lack a surface connection to, and therefore are isolated from, regulated waters. However, in projects with federal funding or oversight, a second federal requirement, Executive Order 11990 Protection of Wetlands, directs the lead federal agencies, in this instance FHWA, to protect isolated wetlands by avoiding direct or indirect support of construction in wetlands when a practicable alternative is available.

Site photographs included in **Appendix 1** illustrate field conditions in October 2011 and May 2012. A wetland delineation was completed in support of the EIS (CDOT 2006a). The wetland delineation was completed by ERO Resources in March 2004 (ERO 2004). Wetlands identified in 2004 were documented using Wetland Determination Forms from the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987). Wetlands identified within the Project Area during the 2004 delineation can be found in Figure 4.11-1 of 4.11.1 of the FEIS. Because the time between the original delineation and the current effort has been over seven years, an update to the delineation was deemed appropriate to ensure that no changes have occurred and to follow the latest Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE 2010).

The approach taken for the Project was to verify that the wetland characteristics described in the 2004 delineation are still applicable and to adjust or confirm the previously delineated wetland boundaries. FHU performed a field verification of the delineated wetlands in October 2011 (**Appendix 4**) and the wetland boundaries were either adjusted or verified in the field using a Trimble® GeoXH™ global positioning system (GPS), which has sub-meter accuracy, with ESRI® ArcPad™ version 10.0 mobile geographic information system (GIS) and impacts were analyzed in the office with ESRI® ArcMap™ GIS v.9.3. If additional wetlands that were not previously identified in the 2004 delineation were present, the boundaries were collected using the Trimble® GeoXH™ GPS (sub-meter accuracy).

The wetland characteristics and boundaries described in the 2004 delineation report are generally consistent with the current conditions. No adjustments to the previous 2004 wetland boundaries along the banks of the South Platte River were made in 2011. A new wetland was identified in the Project Area in 2011.

The newly deposited soils in areas of the South Platte River are still too young to show hydric soil indicators. Figure 9 and **Figure 10** show the wetlands identified in and adjacent to the Project Area in the 2004 delineation and one new wetland identified in the October 2011 wetland delineation. A Great Plains Regional Supplement Wetland Determination Form was completed for this wetland, identified as NE-1. This new wetland, which was previously identified in the 2004 delineation, was identified on the

northeast side of the US 6 bridge over the South Platte River. The wetland area is a fringe wetland (about 4 feet wide or less) (**Appendix 1, Photo 6**) that is found on a lower bank of the river where sediment has deposited in the last seven years. Refer to the *US 6 Bridges Design Build Project Wetland Delineation Report* (FHU 2012) for additional information on characteristics of wetlands in the Project Area, wetland determination forms, and the 2004 delineation (attached as **Appendix** in that report). No other wetlands were identified.

The South Platte River is considered a WUS and is protected under Section 404 of the Clean Water Act. Any impacts to the South Platte River below the Ordinary High Water Mark (OHWM) require mitigation as shown on Figure 10. The WUS and OHWM boundary for the South Platte River depicted in Figure 10 are the same.

According to the 2011 BNSF Biological Review Memo provided by Wilson & Company (**Appendix 4**), no wetlands, waterways or riparian vegetation communities exist within this BNSF bridge area of the project. A concrete-lined drainage ditch with a few scattered wetland plants was present at the time of the field review just outside the Project Area. This concrete-lined drainage ditch lacked sufficient hydric soils and a surface connection to a WUS; therefore would not be considered either a jurisdictional or non-jurisdictional wetland.

2.2.1 Wetland Impacts

The Project will require a Nationwide CWA Section 404 Permit for channel impacts below the OHWM of the South Platte River and impacts to 0.002 acres (100 square feet) of wetlands for the replacement of the US 6 bridge over the South Platte River and the on ramp from SB I-25 to EB US 6. Although certain wetlands may not fall under USACE jurisdiction and therefore are not afforded protection under the Clean Water Act and Executive Order 11990, CDOT policy requires that impacts to all wetlands be avoided and minimized to the greatest possible extent. Therefore, unavoidable impacts to all wetlands will be mitigated under this project. CDOT will seek approval from the USACE to utilize pre-purchased mitigation bank credits for any impacts to wetlands. CDOT will mitigate for the permanently impacted wetland areas (0.002 acres/100 square feet). GPS files from both the 2004 and 2011 wetland delineation report, including the OHWM and WUS boundaries will be provided to the contractor and CDOT to assess impacts below the OHWM of the South Platte River and to wetlands within the Project Area.

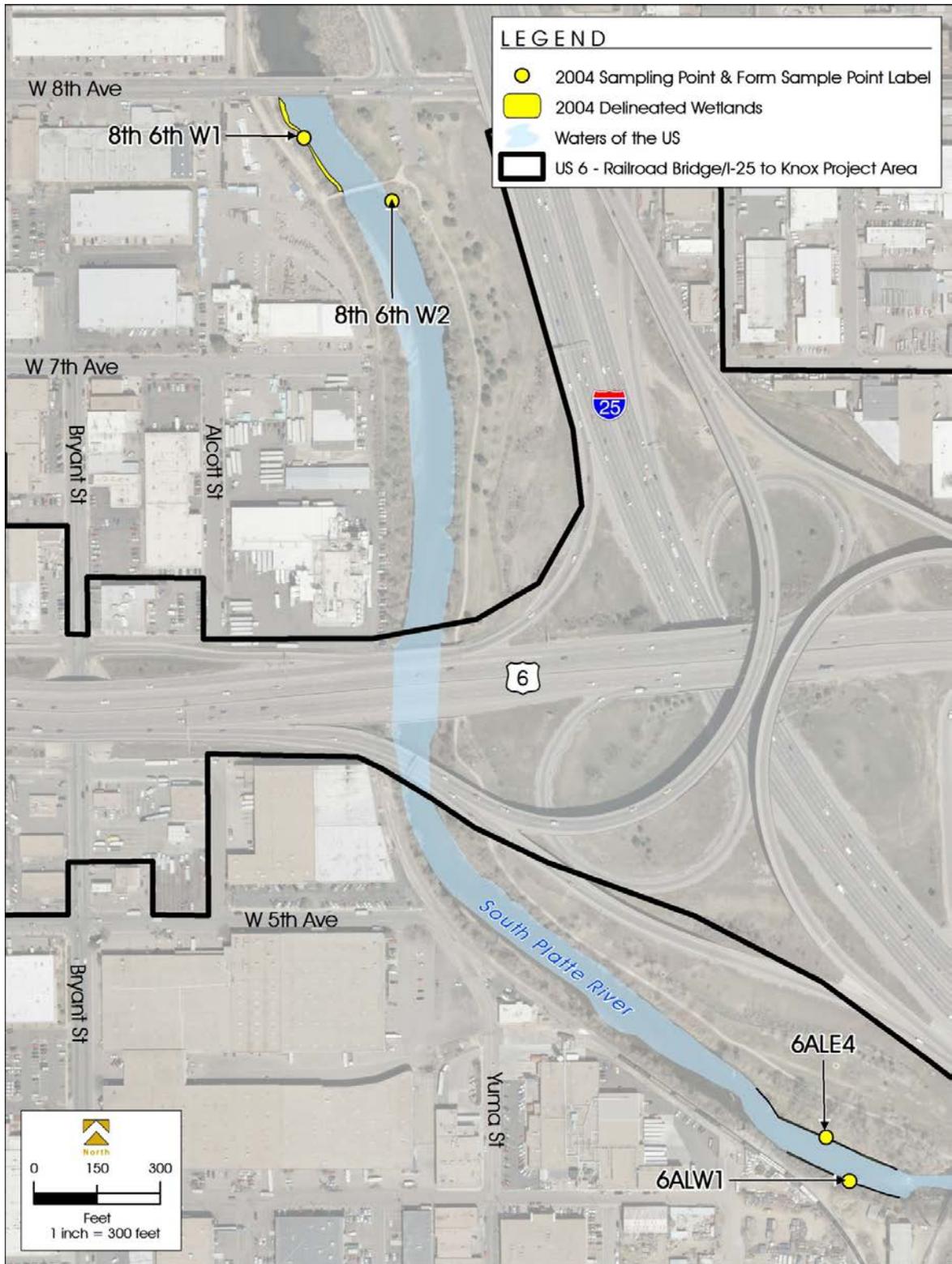


Figure 9: 2004 Delineated Wetlands near the Project Area

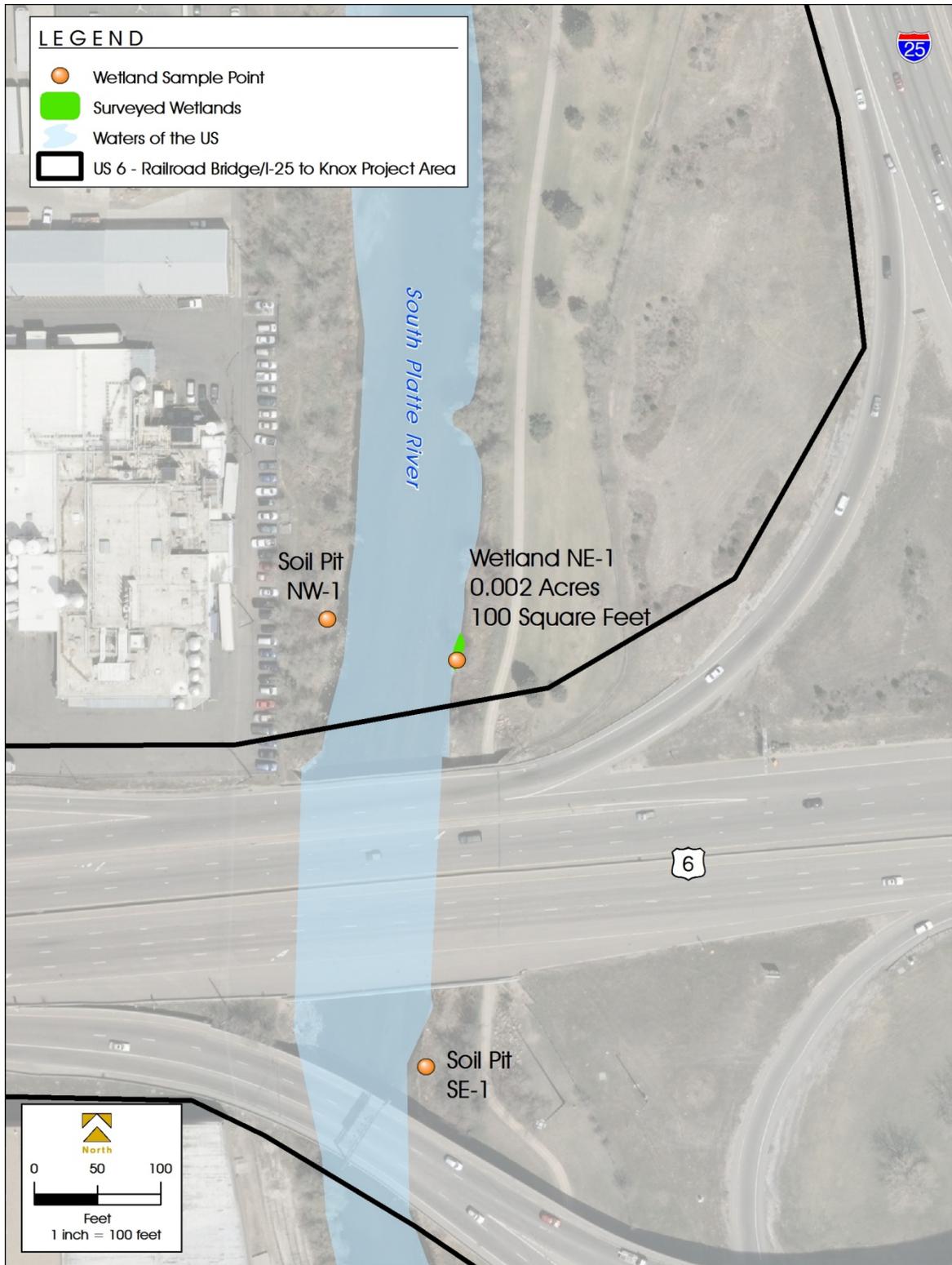


Figure 10: 2011 Delineated Wetlands near the Project Area

2.3 Wildlife

This section discusses the wildlife species that are known or are potentially present in or near the Project Area. Information on species distribution was obtained from existing literature, NDIS database (NDIS 2011), existing reports for nearby and overlapping projects, including the Valley Highway EIS: Logan Street to 6th Avenue (CDOT 2006), and information collected during field surveys conducted in October 2011. A raptor survey was conducted during the site visits in October 2011 and May 2012 (Section 2.4).

This corridor is used by waterfowl, of which both Canada Geese (*Branta canadensis*) and Mallard Ducks (*Anas platyrhynchos*) were observed at the time of the field surveys. Other wildlife tracks identified include raccoon (*Procyon lotor*), coyote (*Canus latrans*), and muskrat (*Ondatra zibethicus*).

Based on the habitats present in the Project Area (Section 2.1), mammals, birds, reptiles, and amphibians could occur within the Project Area. The following section provides a brief description of those that were either observed during field visits or potentially occur within the Project Area.

2.3.1 Mammals

According to the NDIS database, over 44 mammal species are known or likely to occur in CCD (NDIS 2011). These include big game species (hoofed animals), carnivores (canines, cats, and weasels), bats, lagomorphs (rabbits and hares), and rodents (squirrels, chipmunks, mice, voles) (NDIS 2011). These groups of mammals are briefly discussed below.

Big game, including mule deer (*Odocoileus hemionus*) and white-tailed deer (*Odocoileus virginianus*), occupy a variety of habitats within Colorado and both species are known to occur within the South Platte River Drainage. There were no indicators such as tracks or scat of either the two big game species observed during the field review. While these species may incidentally forage within the Project Area; the available foraging habitat within and adjacent to the Project Area has been drastically reduced as a result of noxious weed invasion, human disturbance; residential, commercial and industrial development; and associated infrastructure.

Numerous carnivore species occur in the Project Area, the most common being raccoon (*Procyon lotor*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), and striped skunk (*Mephitis mephitis*). All of these animals use a variety of habitats and their range encompasses large areas (Fitzgerald, et al. 1994). These species may utilize Project Area as a transient individual or for hunting purposes. In some instances, some carnivore species adapted to human presence, such as raccoons, may utilize the Project Area for denning habitat. Tracks and scat were observed and identified as being raccoon and coyote.

There are several bat and lagomorph species that forage within the Project Area. This group includes big brown bat (*Eptesicus fuscus*), big free-tailed bat (*Nyctinomops macrotis*), hoary bat (*Lasiurus cinereus*), little brown myotis (*Myotis lucifugus*), long-eared myotis (*Myotis evotis*), silver-haired bat (*Lasionycteris noctivagans*), eastern cottontail (*Sylvilagus floridanus*), and the white-tailed jackrabbit (*Lepus townsendii*). All of these animals use a variety of habitats, mostly large open areas or edge habitat

(Fitzgerald, et al. 1994). No tracks, scat, dens, roosts, or other sign of these species were observed during the field survey.

There are many rodent species that may occur in the Project Area. This group is very large and species common in the Project Area included muskrat (*Ondata zibethicus*) and fox squirrel (*Sciurus niger*). Various mice and voles, and woodrats (*Neotoma* spp.) would also use the Project Area.

2.3.2 Birds

According to NDIS, there are 271 species of birds known to occur in CCD (NDIS 2011), and according to the Colorado Breeding Bird Atlas II for Block 95F1SE (Incomplete Block Status) there are 9 total species within the Project Area (2011). As a result of the habitats present in the Project Area, many species adapted to human activities are likely to utilize the area. These include the American Robin (*Turdus migratorius*), Red-Tailed Hawk (*Buteo jamaicensis*), Rock Dove (*Columba livia*), and Cliff Swallow (*Petrochelidon pyrrhonota*). Many other bird species may use or pass through the Project Area. Mallard Ducks (*Anas platyrhynchos*), Canada Geese (*Branta canadensis*) and a Black-Crowned Night Heron (*Nycticorax nycticorax*) were observed during the field survey in October 2011.

2.3.3 Fish, Reptiles and Amphibians

According to NDIS, there are 21 species of reptiles and 7 amphibians known to occur in CCD (NDIS 2011). Only a few reptile species (snakes and turtles) are anticipated in the Project Area and one amphibian is anticipated because the South Platte River corridor is degraded and has been channelized to limit flood events. This channelization process has caused a reduction in wildlife habitat. Species like the common garter snake (*Thamnophis sirtalis*) and northern leopard frog (*Rana pipiens*) are potential species in the Project Area.

Fish commonly found within the Denver County segment of the South Platte River include common carp (*Cyprinus carpio*), longnose dace (*Rhinichthys cataractae*), longnose sucker (*Catostomus catostomus*), largemouth bass (*Micropterus salmoides*), yellow perch (*Perca flavescens*), white sucker (*Catostomus commersonii*), fathead minnow (*Pimephales promelas*) and creek chub (*Semotilus atromaculatus*) (USGS 1995). While all species have different life histories and habitat requirements; white sucker, common carp, fathead minnow and creek chub are tolerant species; adaptable to degraded water conditions, habitat alterations, siltation, organic pollution, channelization, or flow fluctuation (USGS 1995). While a fish survey was not conducted, it is anticipated these species would occur in greater abundance than the other species mentioned within the Project Area. Impacts to habitat as a result of the construction of the US 6 Bridge over the South Platte River could result from sediment release during the removal and placement of pilings and abutments and the removal of vegetation along the banks of the South Platte River. These impacts will be avoided, minimized and mitigated for in the provisions in the SB 40 Wildlife Certification and through BMPs implemented in the Nationwide CWA Permit.

2.4 Migratory Birds and Raptors

The vast majority of birds found in Colorado and their nests are protected under the Migratory Bird Treaty Act (MBTA) of 1918; Bald and Golden Eagles have additional protections under the Bald and Golden Eagle Protection Act of 1940. Disturbance of these nests, if active (birds laying eggs, sitting on

eggs, raising young, or other use of a nest), are prohibited. Removal of active bird nests requires a MBTA permit from the United States Fish & Wildlife Service (USFWS) if a *take* occurs or if the nest(s) are *collected* instead of being destroyed (USFWS 2003). Typically, a permit to take an active nest is not granted unless the project is needed to prevent injury or loss of human life.

There is no prohibition that applies to the destruction of a bird nest alone (without birds or eggs), as long as possession does not occur during the destruction (USFWS 2003). For projects with a potential to impact migratory bird nests, CDOT requires Project Special Specification 240 limits construction activity around nests between April 1 to August 31 (CDOT 2011). See **Appendix 6**.

During the site visits in 2011 and 2012, FHU conducted a breeding bird survey to identify the species and locations of breeding birds. During this survey, trees and structures were searched to identify any bird nests. Three individual inactive nests of unknown species and a colony of inactive Cliff Swallow nests were identified during the field visits in October 2011 and early May 2012 (Figure 11). The three unknown nests are north and south of the US 6 bridge over the South Platte River on the west bank of the river, while the colony of Cliff Swallow nests are found on the main US 6 bridge as well as the US 6 exit ramp to I-25. All were inactive at the time of the survey. Therefore, impacts to migratory birds could occur if bridge construction occurs within the nesting season for birds (April 1 to August 31).

No migratory birds or swallow nests were discovered within the vicinity of the BNSF bridge in the September 2011 survey conducted by Wilson & Company (**Appendix 4**).

To avoid any impacts to migratory nesting birds during the construction of the Project, clearing and grubbing will occur between September 1 and March 31. If clearing and grubbing is needed between April 1 and August 31, the contractor will be required to conduct a migratory bird survey and monitoring in accordance with Project Special Specification 240 prior to removal of vegetation. The Cliff Swallow nests on structures over the South Platte River will be removed between September 1 and March 31 to avoid any impacts to these migratory birds in accordance to Project Special Specification 240. If removal of the nests, or placement of netting to discourage nesting, is not completed between September 31 and March 31; the contractor will monitor the structures in accordance with Project Special Specification 240. Additionally, netting or other material will be used to keep Cliff Swallows from re-establishing nests on bridge structures. An additional migratory bird nest survey will be conducted to identify any new bird nests in the Project Area if construction starts between April 1 and August 31 to avoid any additional impacts to migratory birds. If a migratory bird nest is found within the project area, the contractor shall avoid the area within 50 feet of the active nests or the area within the distance recommended by the biologist until all nests within that area have become inactive.

Raptors (birds of prey such as: hawks, falcons, eagles, and owls) receive recommended temporal and spatial buffer areas established by the CDPW, the USFWS and in accordance with the Bald and Golden Eagles Protection Act (BGEPA). During the site visits by the project team, no raptors were observed within the Project Area during the breeding bird survey in October 2011 or in a follow-up survey conducted in May 2012. There were no inactive or abandoned raptor nests within the Project Area. Staff surveyed trees for visual cues of the presence of raptor nests, listened for raptors calling in or near the

Project Area, and looked for visible raptors flying and perching. There were no indications of raptors present or nesting within the Project Area at the time of these surveys. If an active raptor nest is established per CDOW guidelines (CDOW 2008), species-specific buffers for human surface activity will be identified, compliant with CDPW recommendations (CDOW 2008).

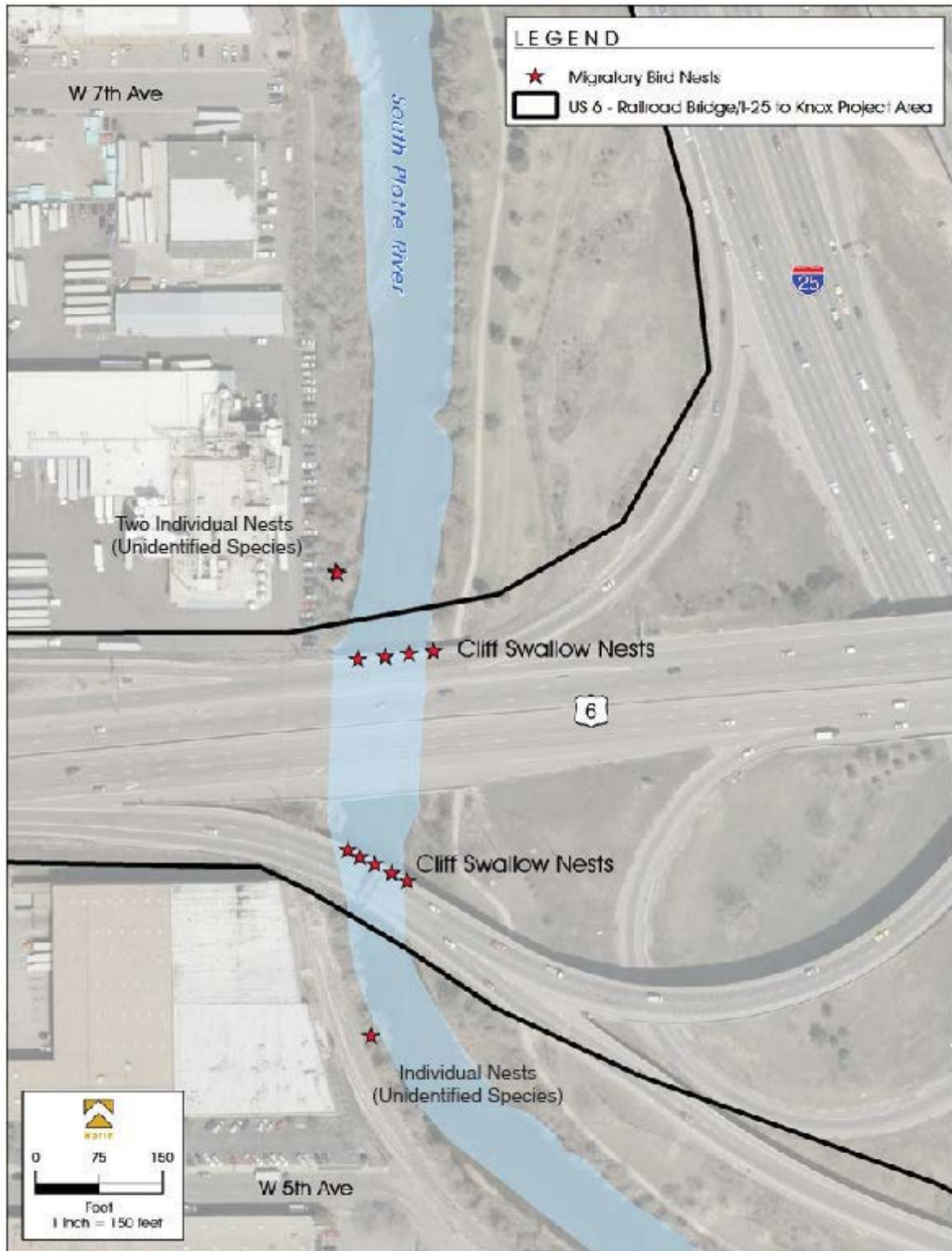


Figure 11: Bird Nests in the Project Area

2.5 Threatened and Endangered Species

The USFWS (2012) lists seven federal threatened and endangered species that could be affected by activities in CCD. None of these species are anticipated in the Project Area because of a lack of suitable habitat. Five of these species can be affected by water depletions from the South Platte River downstream in other states.

The Project has elements that will cause a depletion to the South Platte River basin. In order to address the effects this depletion will have on federally listed species downstream that depend on the river for their survival, CDOT, as a state agency, is participating in the South Platte Water Related Activities Program (SP-WRAP). CDOT is cooperating with FHWA which provides a federal nexus for the Project. In response to the need for formal consultation for the water used from the South Platte basin, FHWA has prepared a Programmatic Biological Assessment (PBA) dated 02/22/2012 that estimates total water usage until 2019. The PBA addresses the following species: Least Tern (interior population) (*Sternula antillarum*), pallid sturgeon (*Scaphirhynchus albus*), Piping Plover (*Charadrius melodus*), western prairie fringed orchid (*Platanthera praeclara*), and the Whooping Crane (*Grus americana*). On 04/04/2012, the USFWS signed a Biological Opinion which concurs with this approach and requires a yearly reporting of water usage. The water used for the Project will be reported to the USFWS at the year's end after the completion of the Project as per the aforementioned consultation. Effects to species not addressed in the PBA or affected by causes other than water depletions to the South Platte, will be analyzed separately.

The Project Area is within the Preble's meadow jumping mouse (*Zapus hudsonius prebelii*), a federal threatened species, Block Clearance Zone which was approved by the USFWS in 2010 (USFWS 2010). The USFWS Block Clearance Zone designation determines an absence of species within a given geographic area; therefore Preble's meadow jumping mouse is not present within the zone and no further coordination with the USFWS is required to address potential impacts to the mouse.

The Ute ladies-tresses orchid (*Spiranthes diluvialis*) requires riparian areas adjacent to nearby permanent water sources. However, the Project Area is within the Ute ladies-tresses orchid Block Clearance Zone, which was approved by the USFWS in 2010 (USFWS 2010) and no further coordination with the USFWS is required to address potential impacts to the orchid (USFWS 2010).

A complete list of federal (USFWS 2011) and state threatened and endangered species, federal candidate species (FC), and state species of special concern (SC) (NDIS 2011) that can be found in CCD are listed in Table 3.

Table 3. Threatened & Endangered Species, Federal Candidate (FC) Species, and State Species of Concern (SC) Found within the City and County of Denver

Common Name	Scientific Name	Threatened / Endangered / FC / SC	Habitat ¹	Habitat Present?
Bald eagle	<i>Haliaeetus leucocephalus</i>	State Threatened	Reservoirs and rivers. In winter they may also occur locally in semideserts and grasslands, especially near prairie dog towns.	Not Present
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	SC	They form large colonies or “towns” in shortgrass or mixed prairie.	Not Present
Common garter snake	<i>Thamnophis sirtalis</i>	SC	Inhabits marshes, ponds, and the edges of streams. Mostly restricted to aquatic, wetland, and riparian habitats.	Present
Ferruginous Hawk	<i>Buteo regalis</i>	SC	Inhabits grasslands and semidesert shrublands, and is rare in pinon-juniper woodlands.	Not Present
Greater Sandhill Crane	<i>Grus canadensis</i>	SC	Migrants occur in mudflats around reservoirs, in moist meadows, and in agricultural areas.	Not Present
Least Tern ² (interior population)	<i>Sternula antillarum</i>	Federal Endangered; State Endangered	Nest on bare sandy shorelines of islands and reservoirs. Migrants occur at reservoirs, lakes, and rivers with bare sandy shorelines.	Not present
Long-Billed Curlew	<i>Numenius americanus</i>	SC	Short-grass grasslands and sometimes in wheatfields or fallow fields. Most nest close to standing water.	Not Present
Midget faded rattlesnake ¹	<i>Crotalus viridis concolor</i>	SC	Tend to prefer rocky outcrops in areas where sage is the abundant vegetation. (venomousreptiles.org 2010)	Not Present
Northern leopard frog	<i>Rana pipiens</i>	SC	Wet meadows and the banks and shallows of marshes, ponds, glacial kettle ponds, beaver ponds, lakes, reservoirs, streams, and irrigation ditches.	Present
Pallid sturgeon ²	<i>Scaphirhynchus albus</i>	Federal Endangered	Adapted to living close to the bottom of large, silty rivers. Preferred habitat has a diversity of depths and velocities formed by braided channels, sand bars, sand flats and gravel bars.	Not present
Peregrine Falcon	<i>Falco peregrines</i>	SC	Nest on cliffs and forage over adjacent coniferous and riparian forests. Migrants occur mostly around waterbodies but may also be seen in grasslands and agricultural areas.	Not Present
Piping Plover ²	<i>Charadrius melodus</i>	Federal Threatened; State Threatened	Inhabits mudflats and shorelines of reservoirs and lakes. Breeding birds are found on sandy open shorelines with pebbles.	Not present
Plains Sharp-Tailed Grouse	<i>Tympanuchus phasianellus jamesii</i>	State Endangered	Occurs in Gambel oak and other shrublands lacking conifers. Cropland and riparian areas are also used, especially in fall and winter. Leks are located in wet meadows, ridges and knolls, or recently burned areas.	Not Present
Preble’s meadow jumping mouse	<i>Zapus hudsonius preblei</i>	Federal Threatened; State Threatened	Inhabits riparian areas near standing or running water in lowland areas that are dominated by forested wetlands, shrub dominated wetlands, and grass/forb dominated wetlands between 4,000 and 8,000 ft in elevation.	Not present, also within Block Clearance Zone

Common Name	Scientific Name	Threatened / Endangered / FC / SC	Habitat ¹	Habitat Present?
Swift fox	<i>Vulpes velox</i>	SC	Inhabits grasslands, from shortgrass to midgrass prairies over most of the Great Plains.	Not Present
Ute ladies'-tresses orchid	<i>Spiranthes diluvialis</i>	Federal Threatened	Occurs along riparian edges, gravel bars, old oxbows, high flow channels, and moist to wet meadows along perennial streams.	Not present, also within block clearance zone
Western Burrowing Owl	<i>Athene cunicularia</i>	State Threatened	Occurs in grasslands in or near prairie dog towns. Summer resident in eastern part of state.	Not present
Western prairie fringed orchid ²	<i>Platanthera praeclara</i>	Federal Threatened	Occurs most often in mesic to wet unplowed tallgrass prairies and meadows but have been found in old fields and roadside ditches.	Not present
Western Snowy Plover ¹	<i>Charadrius alexandrinus nivosus</i>	SC	Nests on sand spits, dune-backed beaches, beaches at creek and river mouths and the banks of lagoons and estuaries. (westernsnowyplover.org 2010)	Not Present
Whooping Crane ²	<i>Grus Americana</i>	Federal Endangered; State Endangered	Has been recorded in mudflats around reservoirs and in agricultural areas.	Not present
Yellow-Billed Cuckoo	<i>Coccyzus americanus</i>	FC	They inhabit lowland riparian forests and urban areas with tall trees. Rare spring and fall migrant, inhabits areas farther south and mountain parks.	Not Present

- Notes:** 1 All habitat information taken from CDOW-NDIS 2011 and USFWS 2011, unless otherwise noted.
2 Water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other states.

No State threatened or endangered species are anticipated to occur in the Project Area. Potential habitat exists on either side of the South Platte River for the northern leopard frog and the common garter snake, both species of State Special Concern.

2.5.1 Common Garter Snake

Habitat for the common garter snake (wetlands and riparian habitats) is present in the Project Area, but these habitats are of marginal quality. The Project will result in a small loss of riparian habitat due to the bridge replacement on US 6 over the South Platte River. The ability to completely avoid impacts to potentially suitable habitat within the Project Area is not feasible because of the limited area to expand the roadway and proximity of this habitat is to the current roadway. Impacts to the common garter snake include foraging habitat loss.

2.5.2 Northern Leopard Frog

Northern leopard frogs inhabit wet meadows and the banks and shallows of marshes, ponds, glacial kettle ponds, beaver ponds, lakes, reservoirs, streams, and irrigation ditches. Northern leopard frogs inhabit elevations ranging from below 3,500 feet to above 11,000 feet (NDIS 2011). The reconstruction of the bridges over the South Platte River will impact suitable breeding habitat for the northern leopard frog through removal of vegetation and sediment release into the South Platte River.

2.5.3 Impacts to State Sensitive Species

The ability to completely avoid impacting the common garter snake and the northern leopard frog during the removal and replacement of the US 6 Bridge over the South Platte River is not feasible because of the limited area to expand the roadway and proximity of the habitat to the current roadway. Impacts to this area will be mitigated by erosion control to keep sediment out of the South Platte River during construction and 1:1 replacement of all Senate Bill 40 vegetation. Impacts to suitable northern leopard frog and common garter snake habitat will be minimal.

3. CONCLUSIONS

Vegetation

There will be impacts to urban and riparian vegetation as a result of the Project. There are numerous trees located within the existing Project Area ROW that will be affected by the Project. Based on current design and grading plans, the Project will remove 169 upland trees. These trees will be replaced with native species at a 1:1 ratio in accordance to CDOT Region 6 policy.

Wetland Resources

A total of 100 square feet of jurisdictional wetlands will be impacted as a result of the Project. FHWA and CDOT policy requires compensatory mitigation for permanent impacts to both jurisdictional and non-jurisdictional wetlands. Wetland mitigation is typically done on a 1:1 basis; however, a Clean Water Act Section 404 permit that is issued by the USACE for jurisdictional impacts may require higher ratios if unique or high quality wetlands are impacted. Permanent impacts to wetlands are less than 0.10 acres; therefore, a Functional Assessment for Colorado Wetlands (FACWet) analysis is not required. The Project will permanently impact less than 500 square feet of wetlands, a Wetland Finding is not required.

Wildlife

The aquatic/open water habitat provides habitat for fish such as common carp, white sucker and fathead minnow. Habitat for these fish could be impacted as a result of the replacement of the structures over the South Platte River.

Migratory Birds and Raptors

The US 6 Bridges Design Build Project has a potential to impact migratory birds as a result of removal of vegetation throughout the project area and the replacement of the structures over the South Platte River. In order to mitigate impacts to migratory birds within the Project Area, CDOT Project Special Provision 240 will be followed.

Threatened and Endangered Species

Since the 2006 FEIS and 2007 Phase 1 ROD, a USFWS Block Clearance Zone (2008) was established for Ute ladies tresses orchid, Preble's meadow jumping mouse and the Colorado butterfly plant. The Project Area falls completely within this Block Clearance Zone; therefore, no additional coordination was

required. No suitable habitat for any federally listed threatened or endangered species occurs within the Project Area.

The Project will result in a depletion to the South Platte River; therefore there is a potential to impact the following federally listed threatened or endangered species: Least Tern, pallid sturgeon, Piping Plover, western prairie fringe orchid, and the Whooping Crane. Impacts to these species as a result of a depletion to the South Platte River are addressed by the April 24, 2012 Biological Opinion issued by the USFWS addressing depletions and impacts to those species.

State Sensitive Species

There will be minor impacts to the northern leopard frog and the common garter snake. Impacts to habitat to the northern leopard frog and the common garter snake will be mitigated by erosion control to keep sediment out of the South Platte River during construction and 1:1 replacement of all Senate Bill 40 vegetation. Measures will be outlined in provisions of the SB 40 Wildlife Certification and BMPs associated with the CWA 404 Permit.

Table 4. Summary of Previously and Currently Identified Biological Resource Impacts and Mitigation

Resource	FEIS and 2007 ROD		US 6 Bridges Design Build Project: What Has Changed	US 6 Bridges Design Build Project	
	Impacts of Proposed Action	Mitigation		Impacts of Proposed Action	Mitigation
Migratory Bird Treaty Act (MBTA)	Potential to disturb migratory bird nests as a result of demolition or construction activities.	To avoid a disturbance or “take” of a migratory bird nest, any trees or man-made structures, such as bridges or highway overpasses, which would be removed during the nesting season, will be surveyed for the presence of active bird nests. If no active nests are observed, the trees or bridges can be removed. However, should removal occur during nesting season, every effort will be made to prevent the nesting of birds, such as swallows, leading up to the demolition of existing structures.	MBTA rules will still apply. The Project will still require the replacement of the structures over the South Platte River and the removal of trees throughout the project area.	Potential to disturb migratory bird nests as a result of tree removal. Potential to disturb nesting Cliff Swallow demolition or construction activities of the structures over the South Platte River.	The Contractor will follow CDOT Project Special Provision 240. 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 during construction, 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.

Resource	FEIS and 2007 ROD		US 6 Bridges Design Build Project: What Has Changed	US 6 Bridges Design Build Project	
	Impacts of Proposed Action	Mitigation		Impacts of Proposed Action	Mitigation
Threatened and Endangered Species	There would be no impacts to threatened and endangered species under any of the system alternatives.	N/A	Depletion to the South Platte River as a result of the construction of the structures over the South Platte River.	Potential to impact the Least Tern (interior population), pallid sturgeon, Piping Plover, western prairie fringed orchid, and the Whooping Crane as a result of a depletion to the South Platte River.	On 04/04/2012, the USFWS signed a Biological Opinion which concurs with this approach and requires a yearly reporting of water usage. The water used for this Project is to be reported to the USFWS at the year's end after the completion of the Project as per the aforementioned consultation. Effects to species not addressed in the PBA or affected by causes other than water depletions to the South Platte, will be analyzed separately. All of this reporting and analysis is done by CDOT's Wildlife Specialist, Jeff Peterson as part of the SPWRAP and does not to be included in the Project Mitigation Tracking Form.
Threatened and Endangered Species	There would be no impacts to threatened and endangered species under any of the system alternatives.	N/A	USFWS Block Clearance (2008) created for Ute ladies tresses orchid, Prebles meadow jumping mouse and the Colorado butterfly plant.	N/A	The project area falls completely within the USFWS Block Clearance Zone for these species; therefore, mitigation will not be required.

Resource	FEIS and 2007 ROD		US 6 Bridges Design Build Project: What Has Changed	US 6 Bridges Design Build Project	
	Impacts of Proposed Action	Mitigation		Impacts of Proposed Action	Mitigation
Vegetation	<p>Direct permanent impacts to vegetation would result from the increased footprint of the highway facilities in each system alternative, including the Preferred Alternative, through widened bridges, reconfigured interchanges, and the widening of I-25 and US 6. Temporary impacts to vegetation will occur throughout the project area during construction due to equipment movement, material storage, and staging area disturbances.</p> <p>Of the five vegetation types identified, the majority of disturbance will occur in the industrial and riparian areas. Impacts to riparian areas will occur at 6th Avenue. Urban landscape vegetation impacts were discussed in Sections 4.3 <i>Parks and Recreation</i> and 4.4 <i>Aesthetics and Urban Design</i> of the FEIS.</p>	N/A	<p>Impacts to vegetation will be similar to those outlined in the FEIS; however, will be limited to the project area defined in this study. These impacts will be limited to CDOT ROW adjacent to the US 6 corridor from the I-25 interchange to Knox Court. There will be impacts to vegetation adjacent to Barnum Park; however, these impacts are discussed in the Aesthetics and Urban Design Technical Report.</p>	<p>There will be impacts to urban and riparian vegetation as a result of this project.</p>	<p>Enhance and incorporate impacted landscape areas (irrigated or otherwise) into final design to ensure the existing landscape does not become fragmented.</p> <p>The Contractor will prepare an SB-40 Wildlife Certification Application and Mitigation Plan and submit to CDOT for final review, approval, and CDOT submittal to the Colorado Parks and Wildlife prior to construction. The Contractor will be responsible for any replacement trees as required. CDOT shall review, approve and submit the application to CPW at least 60 days prior to planned construction or maintenance activities to allow for CPW review of the submitted documents and for follow up coordination, if required. CPW shall complete its review of the application and issue SB-40 Certification or request additional information or mitigation commitments within 30 days of submittal. CDOT Project Special Provision 240 will be followed.</p>

Resource	FEIS and 2007 ROD		US 6 Bridges Design Build Project: What Has Changed	US 6 Bridges Design Build Project	
	Impacts of Proposed Action	Mitigation		Impacts of Proposed Action	Mitigation
Vegetation	Disturbance to vegetation within the project corridor.	To minimize the adverse effects of disturbance to vegetation, the Preferred Alternative will follow CDOT revegetation practices. Disturbed areas will be seeded in phases throughout construction with a CDOT landscaped architect-approved native seed mix. Seeding will occur during appropriate seeding windows. If out of season, the slopes will be temporarily protected from erosion with mulch and mulch tackifier. Permanent seeding will occur throughout the project, bringing areas to completion as soon as possible.	N/A	Disturbance to vegetation within the project corridor.	<p>Reseed and protect temporary disturbance areas with CDOT-approved BMPs and avoid disturbance to existing vegetation, to the maximum extent possible.</p> <p>Seed, mulch, and mulch tackifier will be applied in accordance with CDOT Specifications.</p> <p>Implement the Integrated Noxious Weed Management Plan which is provided in the Biological Resources Report (Appendix G), or as otherwise approved by CDOT.</p>

Resource	FEIS and 2007 ROD		US 6 Bridges Design Build Project: What Has Changed	US 6 Bridges Design Build Project	
	Impacts of Proposed Action	Mitigation		Impacts of Proposed Action	Mitigation
Vegetation	Disturbance to SB 40 vegetation within the project corridor.	Mitigation for impacts to riparian areas will be coordinated with CDOW as required by Senate Bill 40 (33-5-101-107 CRS 1973) as amended. Replacement ratio for trees greater than 2 inches diameter in breast height will be one-to-one. Existing shrubs will be replaced with native species to their pre-construction area/coverage. Existing irrigation systems will be maintained and/or modified appropriately such that existing landscape features are preserved.	N/A	Disturbance to vegetation within the project corridor.	Trees removed during construction shall be replaced with a goal of 1:1 replacement based on a stem count of all trees with diameter at breast height of 2 inches or greater. Shrubs removed during construction, whether native or non-native, will be replaced based on their preconstruction aerial coverage. In all cases, all such trees and shrubs will be replaced with native species.

Resource	FEIS and 2007 ROD		US 6 Bridges Design Build Project: What Has Changed	US 6 Bridges Design Build Project	
	Impacts of Proposed Action	Mitigation		Impacts of Proposed Action	Mitigation
Wetlands	<p>Direct impacts to wetlands and other waters of the U.S. associated with the system alternatives would result from construction on existing or new bridges over the South Platte River, from stormwater drainage outfalls to the South Platte River, and from roadway and interchange reconfiguration.</p>	<p>FHWA and CDOT policy requires compensatory mitigation for permanent impacts to both jurisdictional and non-jurisdictional wetlands. Wetland mitigation is typically done on a 1:1 basis; however, a Clean Water Act Section 404 permit that is issued by the USACE for jurisdictional impacts may require higher ratios if unique or high quality wetlands are impacted. More accurate estimates of temporary and permanent impacts to wetlands will be made during final design and permitting.</p> <p>While 0.45 acres of wetland with hydrological connection to the South Platte River were indicated in the FEIS, none of these wetlands were within the vicinity of the US 6 structures over the South Platte River.</p>	<p>A new wetland was delineated north of the US 6 structures over the South Platte River. This wetland is 100 SF in size.</p> <p>40</p>	<p>Due to the proximity of this wetland to the structure at the South Platte River it is assumed this wetland will be permanently impacted in the construction of the structures over the South Platte River. A total of 100 square feet of jurisdictional wetlands will be impacted as a result of the Project.</p>	<p>The Contractor must accurately estimate the amount of permanent and temporary impacts to all jurisdictional and non-jurisdictional wetlands including the 100 square foot area near the I-25 southbound ramp to US 6 identified in the Biological Resources Report and the impacts below the ordinary high water mark due to the replacement of the South Platte River bridge. The Contractor must provide those impact calculations to CDOT as part of the Section 404 permit application.</p> <p>The contractor must mitigate for temporary and permanent wetland impacts, through banking, to both jurisdictional and non-jurisdictional wetlands on a 1:1 basis, at a minimum. CDOT will pay for mitigation banking credits for up to 100 square feet of wetland impacts. The contractor is responsible to pay for any wetland bank credits greater than 100 square feet from a wetland mitigation bank approved by the USACE.</p>

Resource	FEIS and 2007 ROD		US 6 Bridges Design Build Project: What Has Changed	US 6 Bridges Design Build Project	
	Impacts of Proposed Action	Mitigation		Impacts of Proposed Action	Mitigation
					<p>Ensure that all environmentally sensitive areas have clearly labeled "No Parking and No Staging Areas" on the final plan sheets; all wetlands delineated and mapped for the project as shown in Biological Resources Report that will not be impacted by the project, will be protected from construction activities by construction limit fencing.</p>
					<p>CDOT will require the Contractor to prepare any applications for Clean Water Act Section 404 permits and submit to CDOT for final review, approval, and submittal to USACE.</p> <p>Design and construct minimum length culverts and use construction BMPs to reduce impacts to wetlands, waters of the US and riparian areas.</p> <p>Use construction BMPs to reduce temporary impacts; and use water quality BMPs to minimize indirect impacts.</p>

Resource	FEIS and 2007 ROD		US 6 Bridges Design Build Project: What Has Changed	US 6 Bridges Design Build Project	
	Impacts of Proposed Action	Mitigation		Impacts of Proposed Action	Mitigation
Fish	The aquatic/open water habitat provides habitat for fish such as common carp, white sucker and fathead minnow. Habitat for these fish could be impacted as a result of the replacement of the structures over the South Platte River	Where practicable, construction of bridges over the South Platte River will be conducted during the non-breeding season (August through March) to avoid impacts to spawning fish and spawn beds.	N/A	The aquatic/open water habitat provides habitat for fish such as common carp, white sucker and fathead minnow. Habitat for these fish could be impacted as a result of the replacement of the structures over the South Platte River.	Construct bridges over the South Platte River during the non-breeding season (August through March) to avoid impacts to spawning fish and spawn beds or as otherwise specified in the SB-40 Wildlife Certification.
State Sensitive Species	<i>Not previously discussed</i>	<i>Not previously discussed</i>	N/A	Potential for minor impacts to the northern leopard frog and the common garter snake.	Mitigate for impacts to habitat to the northern leopard frog and the common garter snake by installing any approved BMPs from the SB 40 Wildlife Certification and the Nationwide Clean Water Act Section 404 Permit.

4. REFERENCES

City and County of Denver (CCD). Weed Control Program Website:

<http://www.denvergov.org/parks2/NaturalAreas/ProtectionRestorationandManagement/NoxiousProblemWeedManagement/tabid/432457/Default.aspx> Accessed in October 2011.

Colorado Department of Agriculture (CDA) Division of Plant Industry. 2003. Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act, Title 35, Article X.

CDA. 2010. Noxious Weed Website: <http://www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1174084048733> Accessed in May 2011.

Colorado Department of Public Health & Environment (CDPHE). 2010. Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List. Website:

<http://www.cdphe.state.co.us/regulations/wqccregs/100293wqlimitedsegmdlsnew.pdf>

Colorado Department of Transportation (CDOT). Bridge Sufficiency Rating. 2003

CDOT. Template and Guidance for the Preparation of an Integrated Noxious Weed Management Plan for CDOT Region 6 Planning and Environment. 2006.

CDOT. Final Environmental Impact Statement for the Valley Highway: Logan Street to 6th Avenue Project. November 2006.

CDOT. Section 240 Protection of Migratory Birds. 2011.

<http://www.coloradodot.info/programs/environmental/wildlife/guidelines/BirdspecCDOTbio.pdf> Accessed August 2012.

CDOT & the Federal Highway Administration (FHWA). Record of Decision for the Valley Highway: Logan Street to 6th Avenue Project. 2007.

Colorado Division of Wildlife (CDOW). *CDOW Raptor Guidelines*. February 2008.

Colorado Vegetation Classification Project (CVCP). 2003. Colorado Vegetation Classification Project White Paper. Website: http://ndis.nrel.colostate.edu/coveg/cvcp_whtppr.htm. Accessed July 2011.

Environmental Laboratory. Corps of Engineers Wetlands Delineation Manual. 1987 Available:

<http://el.ercd.usace.army.mil/wetlands/pdfs/wlman87.pdf> Accessed September 2011.

Environmental Protection Agency (EPA). Eco Regions of Colorado. 2008. Website:

ftp://ftp.epa.gov/wed/ecoregions/co/co_front.pdf Accessed September 2011.

ERO Resources. Wetland Delineation Report for the Valley Highway EIS. March 2004.

Federal Highway Administration (FHWA). Guidance on Invasive Species. 1999. Available at:

http://www.fhwa.dot.gov/environment/inv_guid.htm Accessed August 2011.

Felsburg Holt and Ullevig (FHU). US 6 Over Bryant Street, The South Platte River, and I-25 Bridge Reconstruction Wetland Delineation and Verification. November 2011.

Fitzgerald, J. P., Meaney, C. A., and Armstrong, D.M. 1994. *Mammals of Colorado*. Niwot, Colorado: Denver Museum of Natural History, University Press of Colorado.

Hammerson, G. 1999. *Amphibians and Reptiles in Colorado*. Second Edition. University Press of Colorado.

National Atlas. 2010. Website for Bailey's Ecoregions: <http://nationalatlas.gov/mld/ecoregp.html> Accessed August 2011.

Natural Diversity Information Source (NDIS). 2011. Website: <http://ndis.nrel.colostate.edu/conservationcnty.asp?cnty=031> Accessed August 2011.

Natural Resources Conservation Service (NRCS). 2010. Plants database website: <http://plants.usda.gov> Accessed August 2011.

U.S. Army Corps of Engineers (USACE). 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)* ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

United States Fish & Wildlife (USFWS). 2010. *Preble's Meadow Jumping Mouse Block Clearance for the Denver Metro Area*. http://www.fws.gov/mountain-prairie/species/mammals/preble/BLOCK_CLEARANCE/11-23-2010_USFWS_Prebles_Block_Clearance_Map_for_the_Denver_Metro_Area.pdf Accessed September 2011.

USFWS. 2011. Information, Planning, and Conservation System (IPaC) internet mapping tool website: <http://ecos.fws.gov/ipac/wizard/trustResourceList!prepare.action> Accessed January 31, 2011.

U.S. Geologic Survey (USGS). 1995. *Fish Communities in the Plains Region of the South Platte River, August 1993 and 1994*. <http://co.water.usgs.gov/nawqa/splt/factsheets/cathyfact.pdf> Accessed August 2012.

Venomous Reptiles Organization. 2010. *The Midget Faded Rattlesnake*. Website: <http://www.venomousreptiles.org/articles/213> Accessed August 6, 2010.

Western Snowy Plover Organization. 2010. *About the Western Snowy Plover*. Website: http://www.westernsnowyplover.org/about_plovers.html Accessed August 6, 2010.

Wilson & Company. US 6 over BNSF Biological Review. September 2011.

Woodling, John. 1985. *Colorado's Little Fish: A Guide to the Minnows and Other Lesser Known Fishes in the State of Colorado*. Prepared for the Colorado Division of Wildlife, Denver Colorado.

APPENDIX 1 – Site Photographs



Photo 1 — South Platte River looking south toward the existing US 6 bridge



Photo 2 — Looking east over the South Platte River next to US 6, note the trees in the open areas of the highway ramps



Photo 3 — Looking east from the west bank of the South Platte River just north of the US 6 bridge



Photo 4 — Looking north from the west bank of the South Platte River from just north of the US 6 bridge



Photo 5 — Looking east from under the US 6 exit ramp to I-25 on the west bank of the South Platte River (Data Point SE-1 in Appendix 4)



Photo 6 — Looking north from the east side of the South Platte River, the US 6 Bridge is just to the south (Data Point NE-1 in Appendix 4)



Photo 7 — Looking southeast from beneath the US 6 exit ramp to I-25, the South Platte River is to the west



Photo 8 — Looking east from the ROW adjacent to US 6 just due east of the South Platte River



Photo 9 — Looking at the US 6 Bridge over the South Platte River, cliff swallow nests are visible on the bridge



Photo 10 — A pair of mallards seen in the South Platte River, other birds include Canada geese and a juvenile black-crowned night heron



Photo 11 — Concrete lined ditch north and east of US 6 and I-25



Photo 12 — Concrete lined ditch north and east of US 6 and I-25

APPENDIX 2 – List of Observed Vegetation

Common Name	Scientific Name	Commercial /Urban	Grass Dominated	Barren Land	Water (Adjacent Vegetation)	Senate Bill 40 Resource
Woody Plants						
Sandbar willow	<i>Salix exigua</i>				X	X
Rubber rabbitbrush	<i>Ericameria nauseosa</i>	X		X		
Ailanthus tree of heaven	<i>Ailanthus altissima</i>	X			X	X
American elm	<i>Ulmus Americana</i>	X			X	X
Catalpa	<i>Catalpa sp.</i>	X			X	
Crack willow	<i>Salix fragilis</i>	X			X	X
Pinyon pine	<i>Pinus edulis</i>					
Blue spruce	<i>Picea pungens</i>	X				
Honey locust	<i>Gleditsia tracanthos</i>	X		X	X	
Box elder	<i>Acer negundo</i>	X			X	X
Ponderosa pine	<i>Pinus ponderosa</i>	X		X		
Plains cottonwood	<i>Populus deltoides</i>	X	X	X	X	X
Peachleaf willow	<i>Salix amygdaloides</i>	X		X	X	
Rocky Mountain juniper	<i>Juniperus scopulorum</i>	X				X
Russian olive	<i>Elaeagnus angustifolia</i>	X				
Scotch pine	<i>Pinus sylvestris</i>	X				
Siberian elm	<i>Ulmus pumila</i>	X		X	X	X
Herbaceous Plants						
Canada thistle	<i>Cersium arvense</i>		X		X	
Crested wheatgrass	<i>Agropyron cristatum</i>		X	X	X	
Showy milkweed	<i>Asclepias speciosa</i>	X			X	
Jointed goatgrass	<i>Aegilops cylindrical</i>	X				
Smooth brome	<i>Bromus inermis</i>	X	X	X	X	
Cheatgrass/Downy brome	<i>Bromus tectorum</i>	X	X	X	X	
Flixweed	<i>Descurainia sophia</i>		X	X	X	
Puncture Vine	<i>Tribulus terrestris</i>	X		X		
Sedge species	<i>Carex sp.</i>		X		X	
Kochia	<i>Kochia scoparia</i>	X	X	X	X	
Alfalfa	<i>Medicago sativa</i>	X	X	X	X	
Yellow sweetclover	<i>Melilotus officinalis</i>	X	X	X	X	

Common Name	Scientific Name	Commercial /Urban	Grass Dominated	Barren Land	Water (Adjacent Vegetation)	Senate Bill 40 Resource
Scotch thistle	<i>Onopordum acanthium</i>	X	X	X	X	
Western wheatgrass	<i>Pascopyrum smithii</i>	X	X	X	X	
Kentucky bluegrass	<i>Poa pratensis</i>		X	X		
Curly dock	<i>Rumex crispus</i>	X		X	X	
Clover	<i>Trifolium sp.</i>	X	X	X	X	
Common mullein	<i>Verbascum thapsus</i>	X	X	X	X	

X = Observed

APPENDIX 3 – BNSF Biological Resources Memo

Memorandum

Topic: US 6 over BNSF Biological Review
From: Robert Belford – Senior Biologist
Date: September 2, 2011

On September 2, 2011, Robert Belford, Senior Biologist, with Wilson & Company conducted a site visit of the US 6 over Burlington Northern Santa Fe Improvements Project Area to review the site for the presence of biological resources and issues. The weather conditions were partly cloudy with temperatures in the low 80s. The project area consists of urban land use with commercial development.

The project area was observed for the presence of the following biological resources:

- Wildlife (Including sensitive and non-listed species) – No wildlife or their habitat exists within the project area.
- Migratory birds including swallows – No migratory birds or swallows are present within the project area.
- Wetlands and other Waterways- No wetlands, waterways, or riparian vegetation communities occur within the project area. Scattered individual plants were observed in some of the drainage ditches. These pioneer plants do not constitute wetland or riparian communities.
- Vegetation- Non-native vegetation is present within the proposed project area. Noted tree species include locust and sumac.
- Noxious Weeds- The site does contain weed species, but no Colorado listed noxious weeds are present within the project area.

Overall, no biological resources are present within the project area. No further action is required for biological resources.

APPENDIX 4 – Wetland Delineation Report

WETLAND DELINEATION & VERIFICATION

US 6 OVER BRYANT STREET, THE SOUTH PLATTE RIVER, AND I-25 BRIDGE RECONSTRUCTION PROJECT

Project No. FBR 06A-050

Project Code: 18192

Prepared For:

Colorado Department of Transportation

Region 6

2000 South Holly Street

Denver, CO 80222

Federal Highway Administration

12300 West Dakota Ave, Suite 180

Lakewood, CO 80228

Prepared by:

Felsburg Holt & Ullevig

6300 South Syracuse Way, Suite 600

Centennial, CO 80111

PB Americas, Inc.

555 17th Street, Suite 500

Denver, CO 80202

FHU Reference No. 11-139-01

November 2011



TABLE OF CONTENTS

Introduction-----	1
Project Description-----	1
Verification Approach -----	3
Wetland Impacts -----	8
Conclusions-----	8
Literature Cited -----	10

LIST OF FIGURES

	<u>Page</u>
Figure 1 Project Area-----	2
Figure 2 2004 Delineated Wetlands near the Project Area-----	4
Figure 3 Newly Identified Wetland in the Project Area-----	5

LIST OF TABLES

	<u>Page</u>
Table 1 Summary of Wetland Areas and Impacts -----	3

ATTACHMENTS

Site Photographs
2004 Valley Highway EIS Wetland Delineation Report
USACE Wetland Determination Data Forms

INTRODUCTION

The Colorado Department of Transportation (CDOT) is completing the design of the US Highway 6 (US 6) over Bryant Street, the South Platte River, and Interstate Highway 25 (I-25) Bridge Reconstruction Project. The approximate center of the project is located in the City and County of Denver (CCD) in the NW ¼ of NW ¼ of Section 8, T4S, R68W (-105.0156° W and 39.7259° N).

A wetland delineation was completed in March 2004 in support of the Environmental Impact Statement (EIS) for the I-25 Valley Highway: Logan Street to US Highway 6 (US 6) Project (CDOT 2007) by ERO Resources (ERO 2004). This delineation is attached to this report on CD. Wetlands identified in 2004 were documented using Wetland Determination Forms from the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987). The Valley Highway EIS delineation was used as the baseline data because the Valley Highway EIS encompasses the I-25/US 6 Bridge Reconstruction Non-Programmatic Categorical Exclusion (CatEx) Project Area. Because the time between the original delineation and the current effort has been approximately seven years, an update to the delineation was deemed appropriate to ensure that no changes have occurred and to follow the latest Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) (USACE 2010). The revised wetland delineation was performed for the US 6 bridge that crosses over the South Platte River (**Figure 1**).

Alex Pulley, Kevin Maddoux, and Keith Hidalgo (Environmental Scientists), from Felsburg, Holt and Ullevig (FHU) and Tom Roberts from PB Americas, Inc. (PB) performed a field verification in October 2011 of the wetland boundaries in the Project Area. Keith Hidalgo and Jake Lloyd (Landscape Architect) with FHU performed an additional survey in May 2012 to identify any wetlands in a ditch to the north and east of the I-25/US 6 interchange. This document presents the results of these field verifications.

PROJECT DESCRIPTION

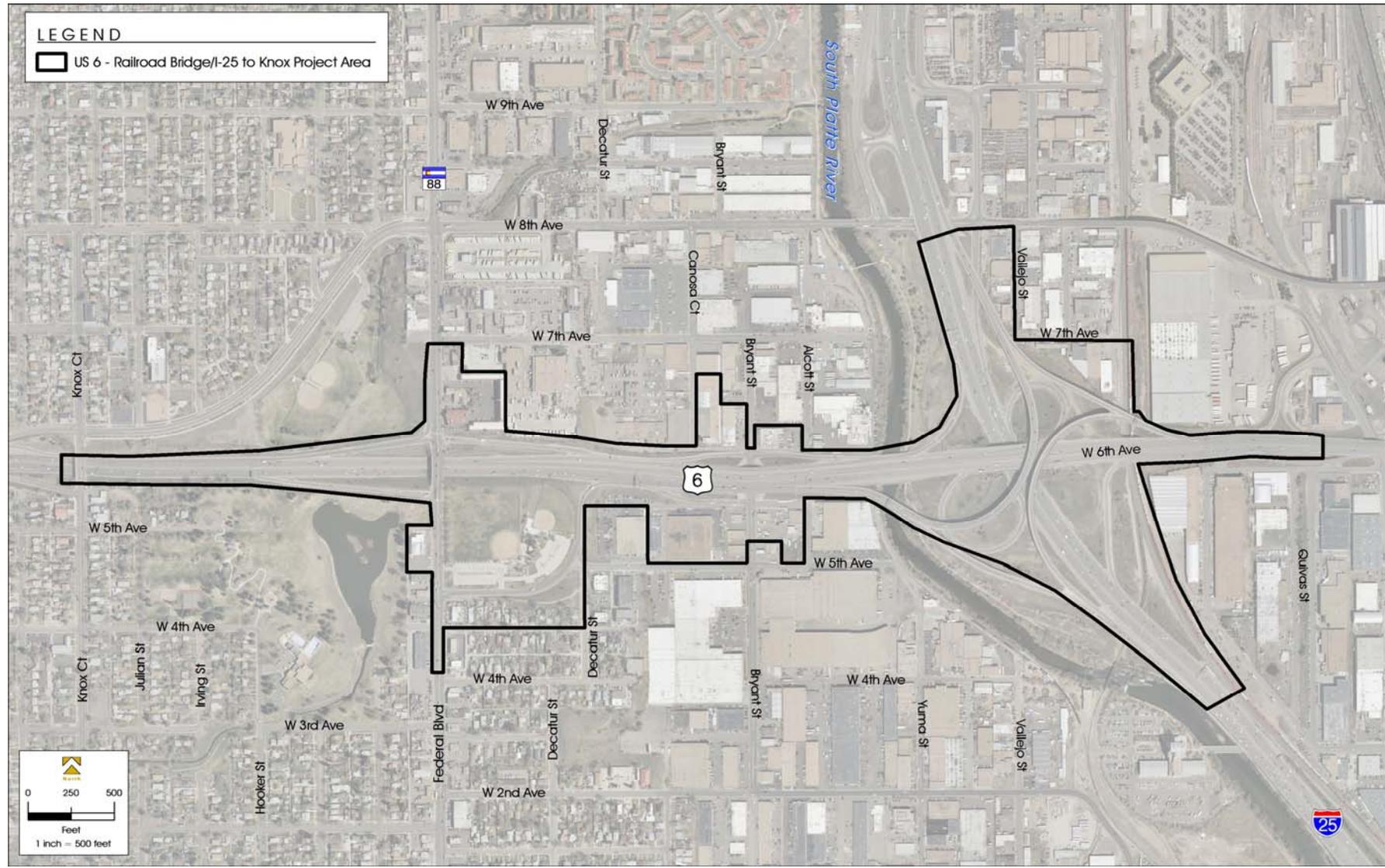
The reconstruction of the US Highway 6 (US 6) bridges over Bryant Street, the South Platte River, and I-25 are included in the Preferred Alternative of the first Record of Decision (ROD) of the I-25 Valley Highway project in the City and County of Denver (CCD), Colorado (CDOT and the Federal Highway Administration [FHWA] 2007).

The purpose of the US 6 over Bryant Street, the South Platte River, and I-25 Bridge Reconstruction project is to reconstruct the existing US 6 bridges over Bryant Street, the South Platte River, and I-25. These bridge structures were constructed in 1958, 1956, and 1958, respectively. The Bryant Street bridge and the South Platte River bridge were rehabilitated in 1967 and the I-25 bridge was rehabilitated in 1966. All three bridges have sustained a significant amount of structural deterioration. The current structural sufficiency ratings for the bridges are 58, 55.4, and 53.9, respectively (CDOT 2008).

The US 6 over Bryant Street, the South Platte River, and I-25 Bridge Reconstruction project includes the following transportation improvements:

- ▶ Reconstruction of the US 6 Bridge over Bryant Street
- ▶ Reconstruction of the US 6 Bridge over the South Platte River
- ▶ Reconstruction of the US 6 Bridge over I-25

Figure 1 Project Area



- ▶ Correction of insufficient “freeboard” to allow an additional 1.0 foot clearance of the South Platte River

VERIFICATION APPROACH

The approach taken for this project was to verify that the wetland characteristics described in the 2004 delineation are still applicable and to adjust or confirm the previously delineated wetland boundaries.

FHU and PB performed a field verification of the delineated wetlands on October 12th 2011. FHU also conducted a survey on May 22nd, 2012 to identify the presence of wetlands in a ditch channel that exists under the westbound US 6 exit ramp to northbound I-25. The wetland boundaries were either adjusted or verified in the field using a Trimble® GeoXH™ global positioning system (GPS) with ESRI® ArcPad™ version 10.0 mobile geographic information system (GIS) and impacts were analyzed in the office with ESRI® ArcMap™ GIS v.10.0.

If additional wetlands were not previously identified in the 2004 delineation, these wetland boundaries were collected using the Trimble® GeoXH™ GPS or if boundaries to the 2004 delineation have changed, these boundaries were edited using the GPS. Wetland characteristics were documented using Wetland Determination Forms from the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) (USACE 2010).

VERIFICATION RESULTS

The wetland characteristics (hydrology, soils, and vegetation) described in the 2004 delineation report are generally consistent with the current conditions. Nearby wetlands that were delineated in 2004 can be seen on **Figure 2**. Soil pits were dug at three locations on either side of the South Platte River to test for hydric soils (**Figure 3**) and one new wetland was identified. No new wetlands exist in the ditch to the northeast of the I-25/US 6 interchange due to it being a concrete lined channel filled with sediment and trash. No wetland vegetation was growing in this channel. Within the past seven years, high water events have scoured the banks of the South Platte River, causing the erosion of sand bars and shallow wetlands that were not anchored by vegetation like sandbar willow (*Salix exigua*), plains cottonwood (*Populus deltoides*), and rip-rap. In other areas these high flows have deposited sediment, creating newly formed wetland soils. This resulted in an addition of approximately 0.002 acres (100 square feet) from a newly formed fringe wetland from the previous wetland delineation conducted in 2004.

The wetlands within the Project Area are shown on **Figure 2** and **Figure 3**. The sizes of the wetlands identified in and adjacent to the Project Area are presented in **Table 1**.

Table 1 Summary of Wetland Areas and Impacts

Plot	Previous Wetland Area (acres)	Area of Wetland (acres)	Potentially Impacted Area (acres)
<i>Previously Identified Wetlands</i>			
8 th 6 th W1	0.051	0.051	0
8 th 6 th W2	0.006	0.006	0
6ALE4	0.019	0.019	0
6ALW1	0.018	0.018	0
<i>Newly Identified Wetlands</i>			
NE-1	N/A	0.002	0.002
Total Area (acres)	0.094	0.096	0.002

Figure 2 2004 Delineated Wetlands near the Project Area

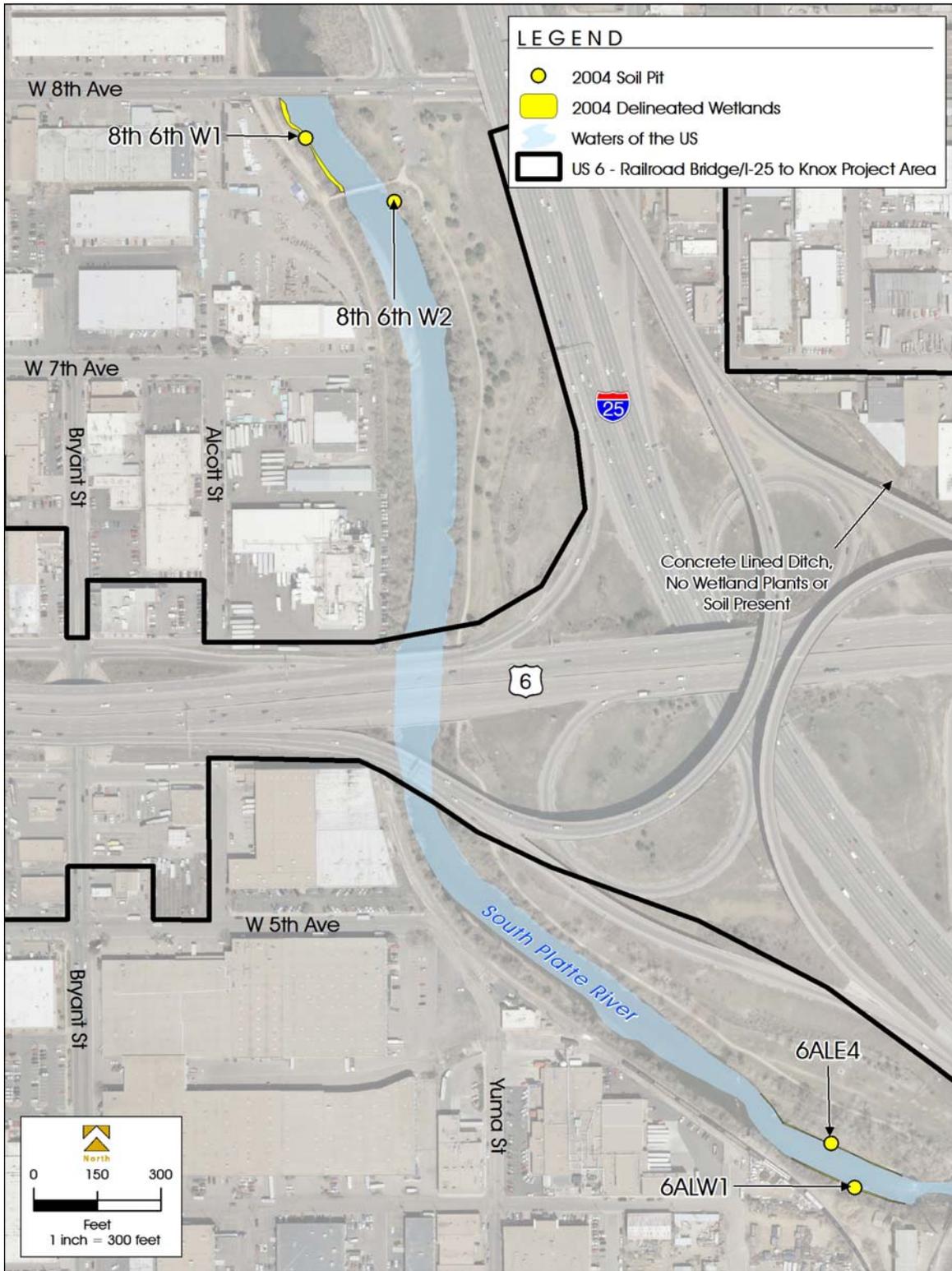
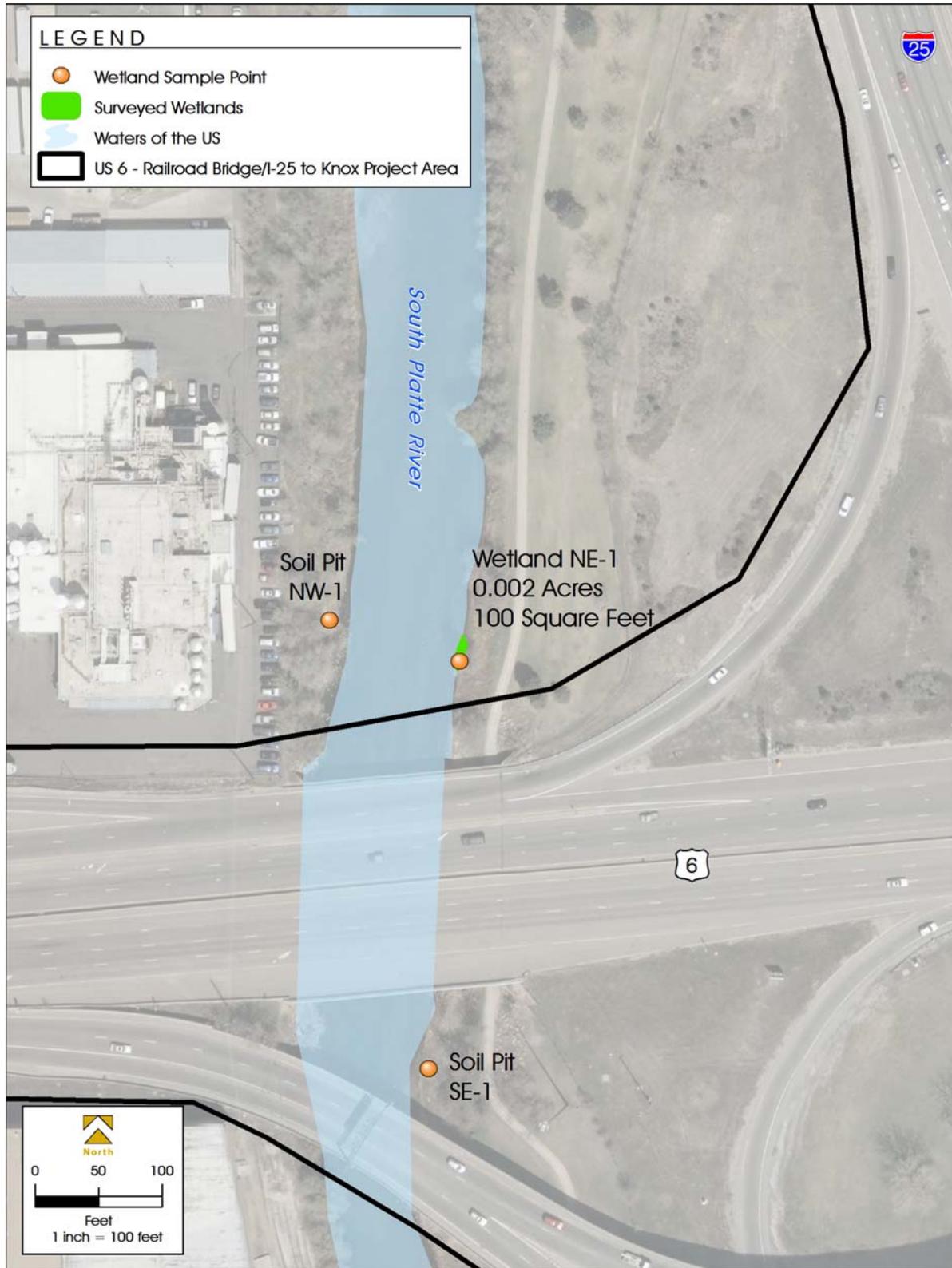


Figure 3 Newly Identified Wetland in the Project Area



Wetland NE-1

One wetland not previously identified in the 2004 delineation was identified on the northeast side of the South Platte River in the Project Area. The wetland lies in a fringe along the banks of the South Platte River where sediment has deposited on rip-rap and a new wetland has grown in the last seven years. It is in the lowest lying area compared to the surrounding areas. A Wetland Determination Form was completed for this wetland and was identified as NE-1. The wetland boundary was collected using the Trimble® GeoXH™ GPS.

The characteristics of this wetland are described below and are shown as NE-1 on **Figure 3**. The site lays on the northeast side of the existing US 6 bridge over the South Platte River. The total size of this wetland is 0.002 acres.

Vegetation

The vegetation in this wetland consisted of a rush (*Juncus sp.*), an Obligate species; reed canarygrass (*Phalaris arundinacea*), a FACW species; soft-stem bulrush (*Scirpus validus*), an Obligate species; and barnyard grass (*Echinochloa crusgalli*), a FACW species. The soft-stem bulrush, reed canarygrass, and the barnyard grass were the dominant species in NE-1 accounting for 60 percent of the cover at this location, while the rush only represented 10 percent of the cover and was not dominant. Bare ground accounted for the other 30 percent of the cover for this wetland. The Dominance Test was passed; therefore, the wetland consisted of hydrophytic vegetation. The upland vegetation surrounding the wetland consisted of mixed brome species.

Hydrology

The primary hydrologic indicators observed were the presence of surface water (the South Platte River) and a high water table due to the presence of the river directly abutting the wetland. Soil saturation was another hydrologic indicator observed in wetland NE-1.

Soils

No Natural Resources Conservation Service (NRCS) Web Soil Surveys are found within the Project Area. However, the soils within the Project Area remain consistent with those identified in the 2004 Wetland Delineation Report (ERO 2004). The soils were identified using the NRCS 1994 STATSGO data which is compiled at a scale of 1:250,000 and used for resource planning, management and monitoring. The Soil Type classes present are Nunn-Ulm-Englewood, Fluvaquents-Alda-Bankard and Nederland-Denver-Kutch series. The 2004 report field-verified the soil types and includes more detail on the specific soil characteristics.

Soils in the Project Area were not a good indicator of wetlands. Soils consisted of thin layers of young sediment deposits from high-flow periods from the South Platte River overlying riprap. Soil color ranged from 7.5 YR 3/1 and 7.5 YR 3/2 to 10 YR 5/3 and 10 YR 6/4. Soil texture was primarily sand or sandy loam. Additionally, where soil pits were dug, soils consisted of riverine deposits of sand, often covered by a thin (2 – 6 inch) layer of loam or sandy loam. In these highly disturbed or newly deposited soils, wetland characteristics such as mottling have not had time to develop. Since the soils in the Project Area did not exhibit strong indicators of wetland characteristics, even in areas that are saturated for significant portions of the growing season, soil characteristics were not weighted heavily in wetland determination. The presence of hydric soil was assumed because both wetland vegetation and hydrology were present, the local relief (slope of 0% and not on a terrace 36 inches above the river) of Wetland NE-1, and due to how young the soils were at the location of Wetland NE-1.

Wetland Function

Because of the small size of the wetland and because at the time of identification, it was assumed no other wetlands would be impacted, a Functional Assessment of Colorado Wetlands (FACWet) was not determined to be required.

Sampling Point NW-1

An area on the northwest side of the South Platte River and US 6 bridge was evaluated for wetland characteristics because of the presence of wetland vegetation (**Figure 3**). A Wetland Determination Form was completed for this area and was identified as NW-1. It was determined that this area was not a wetland because it did not possess characteristics of hydric soils. The following describes the site's characteristics.

Vegetation

The vegetation in this site consisted of sandbar willow (*Salix exigua*), an Obligate species, reed canarygrass (*Phalaris arundinacea*), a FACW species, a sedge (*Carex sp.*), an Obligate species, and Pennsylvania smartweed (*Polygonum pennsylvanicum*), a FACW species. The sandbar willow and the sedge were dominant species accounting for 50 percent of the cover, each. The Pennsylvania smartweed and reed canarygrass only represented 5 percent of the cover each and were not dominant. No other species were identified in the area. The Dominance Test was passed; therefore, the wetland consisted of hydrophytic vegetation. The upland vegetation surrounding the wetland consisted of mixed brome species.

Hydrology

The primary hydrologic indicator observed at the site was the presence of drift deposits.

Soils

A soil pit was dug to evaluate hydric soil characteristics and no indicators were observed. Because no redox concentrations were observed, hydric soil indicator F3-*Depleted Matrix* or S5-*Sandy Redox* are not applicable. The soils at this location were over 36 inches above the South Platte River and on rip-rap. The soils were older in age than Wetland NE-1 and would likely have hydric soil indicators present if this sampling point was a wetland. The soil was very dry and no other indicators of wetland hydric soils were present; therefore, this site does not contain wetland soils.

Sampling Point SE-1

Another area on the southeast side of the South Platte River was evaluated for wetland characteristics because of the presence of wetland vegetation (**Figure 3**). A Wetland Determination Form was completed for this area and was identified as SE-1. It was determined that this area was not a wetland because it did not possess characteristics of hydric soils or wetland hydrology. The following describes the site's characteristics.

Vegetation

The vegetation in this site consisted of sandbar willow (*Salix exigua*), an Obligate species and reed canarygrass (*Phalaris arundinacea*), a FACW species. The sandbar willow and reed canarygrass were dominant species accounting for 20 and 80 percent of the cover, respectively. No other species were identified in the area. The Dominance Test was passed; therefore, the wetland consisted of hydrophytic vegetation. The upland vegetation surrounding the wetland consisted of mixed brome species.

Hydrology

No hydrologic indicators were observed at the site; therefore no wetland hydrology was present.

Soils

A soil pit was dug to evaluate hydric soil characteristics and no indicators were observed. Because no redox concentrations were observed, hydric soil indicator F3-*Depleted Matrix* or S5-*Sandy Redox* are not applicable. The soils at this location were over 36 inches above the South Platte River and on rip-rap. The soils were older in age than Wetland NE-1 and would have hydric soil indicators present if this sampling point was a wetland. The soil was very dry and no other indicators of wetland hydric soils were present; therefore this site does not contain wetland soils.

WETLAND IMPACTS

The ground disturbance in the areas of the wetlands from the project is likely to occur within the Project Area identified in **Figure 1**. Wetland NE-1 is within the ROW and next to the US 6 bridge over the South Platte River that will be reconstructed. The entire NE-1 wetland (0.002 acres) will likely be impacted. **Table 1** summarizes the total wetland area within the Project Area and the anticipated impacts.

CONCLUSIONS

This report summarizes FHU's reverification of wetlands delineated in 2004 in support of the Non-Programmatic Categorical Exclusion for the US 6 bridges over Bryant Street, the South Platte River, and I-25 Bridge Reconstruction Project in the City and County of Denver, Colorado. Mapping from the 2004 delineation was field verified by FHU and PB to ensure that the mapping correctly reflected current conditions. No adjustments to the previously mapped wetlands were necessary; however one new wetland was delineated. The previous wetlands and the new wetland extents are shown in **Figures 2** and **3**; which reflect the most current wetland boundaries. The overall wetland characteristics described in the 2004 delineation are consistent with the conditions observed in the field in 2011 and 2012.

One wetland (NE-1) that was not previously recorded in the 2004 delineation was identified in 2011 and will be impacted by the project. This wetland is likely to be considered jurisdictional by the USACE due to the direct surface connection to the South Platte River, a regulated Waters of the US water body.

The definition of Waters of the US under USACE jurisdiction does not include wetlands that lack a surface connection to, and therefore are isolated from, regulated waters. However, in projects with federal funding or oversight, a second piece of legislation, Executive Order 11990 Protection of Wetlands, directs the lead federal agencies, in this instance FHWA, to protect isolated wetlands by avoiding direct or indirect support of construction in wetlands when a practicable alternative is available.

CDOT mitigates wetlands that have been determined to be jurisdictional and non-jurisdictional by the USACE. Because this project is being undertaken by CDOT, mitigation for impacts to these wetlands will occur.

CDOT will seek approval from the USACE to utilize pre-purchased mitigation bank credits for any impacts to wetlands. CDOT will mitigate for the permanently impacted wetland areas next to the US 6 bridge over the South Platte River (0.002 acres/100 square feet). Because the impacted wetlands are less than 0.10 acres, a Functional Assessment for Colorado Wetlands (FACWet) analysis is not required. Also, because the project will likely impact less than 500 square feet of wetlands, a Wetland Finding is not required. A Clean Water Act Section 404 permit will likely be obtained from the USACE for wetland impacts from the project. Measures



have been taken to avoid/minimize impacts to wetlands in this Project Area, the impact numbers represent the results of the avoidance and minimization actions.

LITERATURE CITED

- Colorado Department of Transportation (CDOT). 2006. I-25 Valley Highway from Logan Street to US Highway 6 Final Environmental Impact Statement.
- CDOT and the Federal Highway Administration (FHWA). 2007. Record of Decision (ROD) for the I-25 Valley Highway from Logan Street to US Highway 6 Final Environmental Impact Statement..
- U.S. Army Corps of Engineers (USACE). 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)* ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- Natural Resource Conservation Service. 2011. Custom Soil Resource Report for the City and County of Denver, Colorado.

Site Photographs



Photo 1 — South Platte River looking south toward the existing US 6 bridge



Photo 2 — Looking east from the west bank of the South Platte River just north of the US 6 bridge



Photo 3 — Looking north from the west bank of the South Platte River from just north of the US 6 bridge



Photo 4 — Looking east from under the US 6 exit ramp to I-25 on the west bank of the South Platte River



Photo 5 — Looking north from the east side of the South Platte River, the US 6 bridge is just to the south; the NE-1 Wetland is located on a small sandbar in front of the vegetation in this picture



Photo 10 — A view of the rip-rap and thin layer of vegetation along the banks of the South Platte River



Photo 11 — The concrete lined ditch north and east of US 6 and I-25.
No wetland plants or hydric soils are present; it is just filled with trash and mud.



Photo 12 — The concrete lined ditch north and east of US 6 and I-25.

***2004 Valley Highway EIS Wetland Delineation
(see attached CD)***

*US 6 Bridge Reconstruction: Bryant Street, S. Platte River, and I-25
Project - Wetland Delineation Report*



USACE Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site:	<u>US 6 / South Platte River</u>	City/County:	<u>Denver/Denver</u>	Sampling Date:	<u>10/12/2011</u>		
Applicant/Owner:	<u>CDOT</u>	State:	<u>Colorado</u>	Sampling Point:	<u>NE-1</u>		
Investigators:	<u>AP, KM, KH, TR</u>	and	<u>--</u>	Section, Township, Range:	<u>Section 8, T 4S, R 68</u>		
Landform (hillslope, etc.):	<u>Terrace</u>	Local relief (concave, etc.):	<u>Concave</u>	Slope %:	<u>0</u>		
Subregion (LRR):	<u>LRR G</u>	Lat:	<u>39.7259</u>	Long:	<u>-105.0156</u>		
		Datum:	<u>NAD 83</u>				
Soil Map Unit Name:	<u>N/A</u>	NWI Classification:	<u>PSSA/R2UBH</u>				
Are climatic / hydrologic conditions on the site typical for this time of year?	<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No		(If no, explain in Remarks.)		
Are vegetation <u>NO</u> , Soil <u>NO</u> , or Hydrology <u>NO</u> significantly disturbed?	Are "Normal						
Are vegetation <u>NO</u> , Soil <u>YES</u> , or Hydrology <u>NO</u> naturally problematic?	<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No				
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.							
Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is the Sampled Area within a Wetland?				
Hydric Soil Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No				<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No					
Remarks: Soils were newly deposited sediments, not old enough to show wetland hydric soil characteristics							

VEGETATION - Use scientific names of plants

<i>Scientific Name</i>	Common Name	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
Tree Stratum >3" DBH (Plot size: 30' radius)					
1. --	--	--	--	--	
2. --	--	--	--	--	
3. --	--	--	--	--	
4. --	--	--	--	--	
5. --	--	--	--	--	
0% = Total Cover					Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B) Prevalence Index worksheet: Total % Cover of: <u>30</u> x 1 = <u>30</u> FACW species <u>40</u> x 2 = <u>80</u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u>70</u> (A) <u>110</u> (B) Prevalence Index = B/A= 1.57
Sapling/Shrub Stratum <3" DBH or >1m tall (Plot size: 15' radius)					
1. --	--	--	--	--	
2. --	--	--	--	--	
3. --	--	--	--	--	
4. --	--	--	--	--	
5. --	--	--	--	--	
0% = Total Cover					
Herb Stratum non-woody or woody <1 m tall (Plot size: 5' radius)					Hydrophytic Vegetation Indicators <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <i>Juncus sp.</i>	#N/A	10%	N	OBL	
2. <i>Scirpus validus</i>	BULRUSH,SOFT-STEM	20%	Y	OBL	
3. <i>Phalaris arundinacea</i>	GRASS,REED CANAR'	20%	Y	FACW+	
4. <i>Echinochloa crusgalli</i>	GRASS,BARNYARD	20%	Y	FACW	
5. --	--	--	--	--	
6. --	--	--	--	--	
7. --	--	--	--	--	
8. --	--	--	--	--	
9. --	--	--	--	--	
10. --	--	--	--	--	
70% = Total Cover					
Woody Vine Stratum > 1m tall (Plot size: 30' radius)					
1. --	--	--	--	--	
2. --	--	--	--	--	
0% = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet.)					
Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					

SOILS

Sample Point: NE-1

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12"	10YR	2/2	95%	N	--	--	--	sandy loam
--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--

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:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 OF LRR H)	

1 cm Muck (A9) (LRR I, J)
 Coastal Prairie Redox (A16) (LRR F, G, H)
 Dark Surface (S7) (LRR G)
 High Plains Depressions (F16)
 (LRR H Outside of MLRA 72 & 73)
 Reduced Vertic (F18)
 Red Parent Material (TF2)
 Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Bedrock/Large Rock

Depth (inches): 12

Hydric Soil Present? Yes No

A lower sandbar next to the river, newly formed soils so not easily discernable indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	(where tilled)
<input type="checkbox"/> Drift Deposits (B3)	(where not tilled)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (I)	<input type="checkbox"/> Others (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth (inches):	Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water Table Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Depth (inches): <u>5"</u>	
Saturation Present? (includes capillary fringe)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Depth (inches): <u>4"</u>	

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

Remarks: Drift deposits indicative of high flows on river. Water table at 5" and saturation at 4" with wicking.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site:	<u>US 6 / South Platte River</u>	City/County:	<u>Denver/Denver</u>	Sampling Date:	<u>10/12/2011</u>
Applicant/Owner:	<u>CDOT</u>	State:	<u>Colorado</u>	Sampling Point:	<u>NW-1</u>
Investigators:	<u>AP, KM, KH, TR</u>	and	<u>--</u>	Section, Township, Range:	<u>Section 8, T 4S, R 68</u>
Landform (hillslope, etc.):	<u>Terrace</u>	Local relief (concave, etc.):	<u>Concave</u>	Slope %:	<u>0</u>
Subregion (LRR):	<u>LRR G</u>	Lat:	<u>39.726</u>	Long:	<u>-105.0159</u>
		Datum:	<u>NAD 83</u>		
Soil Map Unit Name:	<u>N/A</u>	NWI Classification:	<u>PSSA/R2UBH</u>		
Are climatic / hydrologic conditions on the site typical for this time of year?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If no, explain in Remarks.)				
Are vegetation <u>NO</u> , Soil <u>NO</u> , or Hydrology <u>NO</u> significantly disturbed?	Are "Normal Circumstances" present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
Are vegetation <u>NO</u> , Soil <u>NO</u> , or Hydrology <u>NO</u> naturally problematic?					
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is the Sampled Area within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Hydric Soil Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No			
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No			
Remarks: Soils were newly deposited sediments, not old enough to show wetland hydric soil characteristics					

VEGETATION - Use scientific names of plants

<i>Scientific Name</i>	Common Name	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
Tree Stratum >3" DBH (Plot size: 30' radius)						Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
1. --	--	--	--	--	Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
2. --	--	--	--	--		
3. --	--	--	--	--		
4. --	--	--	--	--		
5. --	--	--	--	--		
0% = Total Cover					Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
Sapling/Shrub Stratum <3" DBH or >1m tall (Plot size: 15' radius)						
1. <i>Salix exigua</i>	WILLOW,SANDBAR	50%	Y	OBL	Prevalence Index worksheet:	
2. --	--	--	--	--		
3. --	--	--	--	--		
4. --	--	--	--	--		
5. --	--	--	--	--		
50% = Total Cover					Total % Cover of: <u>100</u> x 1 = <u>100</u>	
Herb Stratum non-woody or woody <1 m tall (Plot size: 5' radius)					FACW species <u>10</u> x 2 = <u>20</u>	
1. <i>Carex sp.</i>	#N/A	50%	Y	OBL	FAC species _____ x 3 = _____	
2. <i>Phalaris arundinacea</i>	GRASS,REED CANAR'	5%	Y	FACW+	FACU species _____ x 4 = _____	
3. <i>Polygonum pensylvanicu</i>	SMARTWEED,PENNS'	5%	Y	FACW+	UPL species _____ x 5 = _____	
4. --	--	--	--	--	Column Totals: <u>110</u> (A) <u>120</u> (B)	
5. --	--	--	--	--	Prevalence Index = B/A= 1.09	
6. --	--	--	--	--	Hydrophytic Vegetation Indicators	
7. --	--	--	--	--		
8. --	--	--	--	--		
9. --	--	--	--	--		
10. --	--	--	--	--		
60% = Total Cover						<input checked="" type="checkbox"/> Dominance Test is > 50%
Woody Vine Stratum > 1m tall (Plot size: 30' radius)						<input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹
1. --	--	--	--	--		Morphological Adaptations ¹
2. --	--	--	--	--		(Provide supporting data in Remarks or on a separate sheet)
0% = Total Cover						Problematic Hydrophytic Vegetation ¹
Remarks: (Include photo numbers here or on a separate sheet.)					(Explain)	
					¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
					Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site:	<u>US 6 / South Platte River</u>	City/County:	<u>Denver/Denver</u>	Sampling Date:	<u>10/12/2011</u>
Applicant/Owner:	<u>CDOT</u>	State:	<u>Colorado</u>	Sampling Point:	<u>SE-1</u>
Investigators:	<u>AP, KM, KH, TR</u>	and	<u>--</u>	Section, Township, Range:	<u>Section 8, T 4S, R 68</u>
Landform (hillslope, etc.):	<u>Terrace</u>	Local relief (concave, etc.):	<u>Concave</u>	Slope %:	<u>0</u>
Subregion (LRR):	<u>LRR G</u>	Lat:	<u>39.725</u>	Long:	<u>-105.0157</u>
		Datum:	<u>NAD 83</u>		
Soil Map Unit Name:	<u>N/A</u>	NWI Classification:	<u>PSSA/R2UBH</u>		
Are climatic / hydrologic conditions on the site typical for this time of year?	<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No (If no, explain in Remarks.)		
Are vegetation <u>NO</u> , Soil <u>NO</u> , or Hydrology <u>NO</u> significantly disturbed?	Are "Normal Circumstances" present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
Are vegetation <u>NO</u> , Soil <u>NO</u> , or Hydrology <u>NO</u> naturally problematic?					
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is the Sampled Area within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Hydric Soil Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No			
Wetland Hydrology Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No			
Remarks: Vegetation indicators present, but no hydrology or soils present					

VEGETATION - Use scientific names of plants

<i>Scientific Name</i>	Common Name	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
Tree Stratum >3" DBH (Plot size: 30' radius)						Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
1. --	--	--	--	--	Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
2. --	--	--	--	--		
3. --	--	--	--	--		
4. --	--	--	--	--		
5. --	--	--	--	--		
0% = Total Cover					Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
Sapling/Shrub Stratum <3" DBH or >1m tall (Plot size: 15' radius)						
1. <i>Salix exigua</i>	WILLOW,SANDBAR	20%	Y	OBL	Prevalence Index worksheet:	
2. --	--	--	--	--		
3. --	--	--	--	--		
4. --	--	--	--	--		
5. --	--	--	--	--		
20% = Total Cover					Total % Cover of: <u>20</u> x 1 = <u>20</u>	
Herb Stratum non-woody or woody <1 m tall (Plot size: 5' radius)					FACW species <u>80</u> x 2 = <u>160</u>	
1. <i>Phalaris arundinacea</i>	GRASS,REED CANAR'	80%	Y	OBL	FAC species _____ x 3 = _____	
2. --	--	--	Y	--	FACU species _____ x 4 = _____	
3. --	--	--	Y	--	UPL species _____ x 5 = _____	
4. --	--	--	--	--	Column Totals: <u>100</u> (A) <u>180</u> (B)	
5. --	--	--	--	--	Prevalence Index = B/A= 1.8	
6. --	--	--	--	--	Hydrophytic Vegetation Indicators	
7. --	--	--	--	--		
8. --	--	--	--	--		
9. --	--	--	--	--		
10. --	--	--	--	--		
80% = Total Cover						<input checked="" type="checkbox"/> Dominance Test is > 50%
Woody Vine Stratum > 1m tall (Plot size: 30' radius)						<input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹
1. --	--	--	--	--		Morphological Adaptations ¹
2. --	--	--	--	--		(Provide supporting data in Remarks or on a separate sheet)
0% = Total Cover						Problematic Hydrophytic Vegetation ¹
Remarks: (Include photo numbers here or on a separate sheet.)					(Explain)	
					¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
					Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

SOILS

Sample Point: SE-1

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10"	7.5YR	2/2	80%	N	--	--	sandy loam	
--	--	--	--	--	--	--	--	
--	--	--	--	--	--	--	--	
--	--	--	--	--	--	--	--	
--	--	--	--	--	--	--	--	
--	--	--	--	--	--	--	--	

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:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 OF LRR H)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Coastal Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> High Plains Depressions (F16)
(LRR H Outside of MLRA 72 & 73)
<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: No distinct mottling.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) (where not tilled) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (I) <input type="checkbox"/> Others (Explain in Remarks) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Depth (inches): _____	Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Depth (inches): _____	
Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Depth (inches): _____ (includes capillary fringe)	

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

Remarks:

APPENDIX 5 – Integrated Noxious Weed Management Plan

US 6 Bridges Design Build Project

BR 0061-083

Sub Account Number 18838 (CN)

Noxious Weed Management Plan

Prepared for:
Colorado Department of Transportation
Federal Highway Administration

Prepared by:

**PARSONS
BRINCKERHOFF**

August 2012

Contents

1.0	Introduction	2
1.1	Noxious Weed Management Requirements.....	2
1.2	CDOT Noxious Weed List & Management Plan	3
2.0	Project Area and Project Description.....	3
3.0	Past Land Use and Ecological Condition of Project Area	4
4.0	Noxious Weed Survey Methods.....	4
5.0	Noxious Weed Survey Results.....	6
6.0	General Noxious Weed Management Strategies.....	6
7.0	Specific Noxious Weed Control Measures	7
8.0	Management Actions & Schedule.....	8

1.0 Introduction

In accordance with the National Environmental Policy Act of 1969 and its related statutes and regulations, the Colorado Department of Transportation (CDOT) in cooperation with the Federal Highway Administration (FHWA), has prepared a Record of Decision (ROD) for Phase 5 of the Interstate I-25 (I-25) Valley Highway Project (VHEIS), a Reevaluation of the Phase 1 and 2 ROD of the of the VHEIS in support of the overall US 6 Bridges Design Build Project (herein referred to as the Proposed Project). The Proposed Project includes modifications to the roadway, interchanges, and bridges along 6th Avenue (US 6) between Sheridan Boulevard and the BNSF Railway in Denver, Colorado. This identified the presence of noxious weeds within the proposed project area and a potential for increased infestation of invasive weeds during construction. Therefore, this Integrated Noxious Weed Management Plan outlines the species, location of specific noxious weed species populations, and the management actions that will be implemented to eliminate or prevent noxious weeds during the project.

The Colorado Noxious Weed Act requires the control of the 71 plant species designated as noxious weeds. According to the Colorado Department of Agriculture, noxious weeds are plants that reduce agricultural productivity, lower real estate values, endanger human health and well-being, and damage scenic values (CDA 2010). The state has divided the 71 noxious weeds into three groups: Lists A, B, and C.

List A includes 18 plant species that have very limited to no distribution in Colorado and are designated for immediate eradication. List B includes 39 species that are locally common but are managed to stop continued spreading. List C includes 14 species that are generally widespread and are not managed to stop spreading but to provide additional education research, and biological control.

An Integrated Noxious Weed Management Program will be included with the construction Contract and is intended to comply with the following regulations and guidelines:

- Colorado Department of Agriculture, Plant Industry Division, Colorado Noxious Weed Act, 35-5.5-101 119, Colorado Revised Statutes (CRS) (2003)
- Federal Executive Order 13112 Invasive Species
- Federal Highway Administration (FHWA) Guidance on Invasive Species (FHWA 1999)
- Template and Guidance for the Preparation of an Integrated Noxious Weed Management Plan for CDOT Region 6 Planning and Environment (CDOT 2006b)
- City and County of Denver Noxious Weed Management Plan (CCD 2011)
- Colorado Department of Agriculture, Plant Industry Division, Colorado Weed Free Forage Crop Certification Act, Title 35, Article 27.5 (CRS 2011)

1.1 Noxious Weed Management Requirements

Noxious weeds are non-native invasive plant species that have been introduced into native plant communities and often out-compete and damage these plant communities. With their ability to spread rapidly, easily reproduce, and resist control, noxious weeds threaten stable native plant communities. Because of these adverse environmental impacts resulting from noxious weeds, local, state and federal agencies have developed orders and regulations to manage weeds. The following regulations represent the major regulations associated with managing noxious weeds:

- **Presidential Executive Order 13112- Invasive Species**

Executive Order 13112, Invasive Species, was issued on February 3, 1999, to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that result from invasive species. This order directs federal agencies to prevent the introduction of invasive species, control and monitor invasive species, and restore native species and habitat that have been invaded.

- **Colorado Noxious Weed Act**

The Colorado Noxious Weed Act, 35-5.5-101, C.R.S. (2003) as amended, states that all landowners must manage noxious weeds that may be damaging to adjacent landowners. The Act identifies three categories of weeds that are targeted for management in Colorado. The A List contains 18 weed species that are targeted for eradication in Colorado. The B List contains 36 species that are targeted for eradication, containment, or suppression. The C List contains 14 species that are of concern in Colorado. C-List weeds are species that are controlled by local agencies in areas where they can cause damage to native plant communities.

1.2 CDOT Noxious Weed List & Management Plan

CDOT maintains a list of 30 noxious weeds that are targeted for control by the agency's road maintenance program. The preparation of the Integrated Noxious Weed Management Plan is consistent with complying with the Colorado Noxious Weed Act, associated Colorado Department of Agriculture rules, State of Colorado Executive Order D 006 99 Development and Implementation of Noxious Weed Management Programs of July 19, 1999, and the US 6 Bridges Design Build Project. The Colorado Noxious Weed Act directs state agencies to prepare plans to manage noxious weeds. A potential noxious weed must meet one or more of the following criteria:

- It aggressively invades or is detrimental to economic crops or native plant communities.
- It is toxic to livestock.
- It is a carrier of harmful insects, diseases, or parasites.
- The direct or indirect effect of the presence of this plant is detrimental to the environmentally sound management of natural or agricultural plant systems.

2.0 Project Area and Project Description

The US 6 Bridges Design Build Project includes the reconstruction of US, the reconfiguration of interchanges from Federal Boulevard to I-25, reconstruction of the US 6 bridges from Federal Boulevard to the bridge over the BNSF Railway. The Proposed Project includes the following elements:

- The replacement of five bridges along US 6: Federal Boulevard, Bryant Street, South Platte River, I-25, and BNSF Railway. Three of these bridges are in poor condition and the other two are functionally obsolete. The project would also add a tunnel immediately east of I-25 under US 6 to separate traffic on northbound I-25 from traffic exiting the interstate to travel east and west on US 6.
- Ramp improvements at the I-25/US 6 interchange, closure of the westbound (WB) US 6 to Bryant Street ramp, a diamond interchange at US 6/Federal Boulevard with slip ramps to Bryant Street, and a braided ramp from Federal Boulevard to eastbound (EB) US 6.
- Reconstruction of US 6 with collector-distributor roads/auxiliary lanes from Federal Boulevard to the BNSF Railway bridge structure

- Conversion of 5th Avenue to two-way traffic from Federal Boulevard to Decatur Street
- Widening of Federal Boulevard, from five to six lanes, from 5th to 7th Avenues to accommodate current and future improvements
- Pavement resurfacing of US 6 from Knox Boulevard to Sheridan Boulevard
- In-kind replacement of impacted facilities for Barnum East Park
- A bicycle/pedestrian bridge structure over US 6, connecting Barnum North Park and Barnum Park (also known as Barnum Park South, and herein referred to as Barnum Park South)
- Upgrading portions of the South Platte River Trail to current standards

3.0 Past Land Use and Ecological Condition of Project Area

The project area is located in the plains grassland ecosystem. However, because of the high level of human development within the project area, little of this ecosystem remains. Much of the area contains a mixture of commercial and industrial properties, with parks adjacent to 6th Avenue near Federal Blvd. The vegetation along the corridor is mostly industrial with mix grasslands at the interchanges and urban landscape near the park area.

4.0 Noxious Weed Survey Methods

Noxious weeds were surveyed for in October 2011 and in May 2012 by FHU staff using a Trimble® GeoXH™ global positioning system (GPS) with ESRI® ArcPad™ version 10.0 mobile geographic information system (GIS). The Project Area contained scattered populations of noxious weeds and in some areas, individual plants. Staff delineated noxious weed populations greater than 5 percent ground cover throughout the Project Area; these mapped areas can be found in Figure 1. The period of the survey and maintenance activities, such as mowing, within the project area ROW created occasional challenges in vegetation identification.

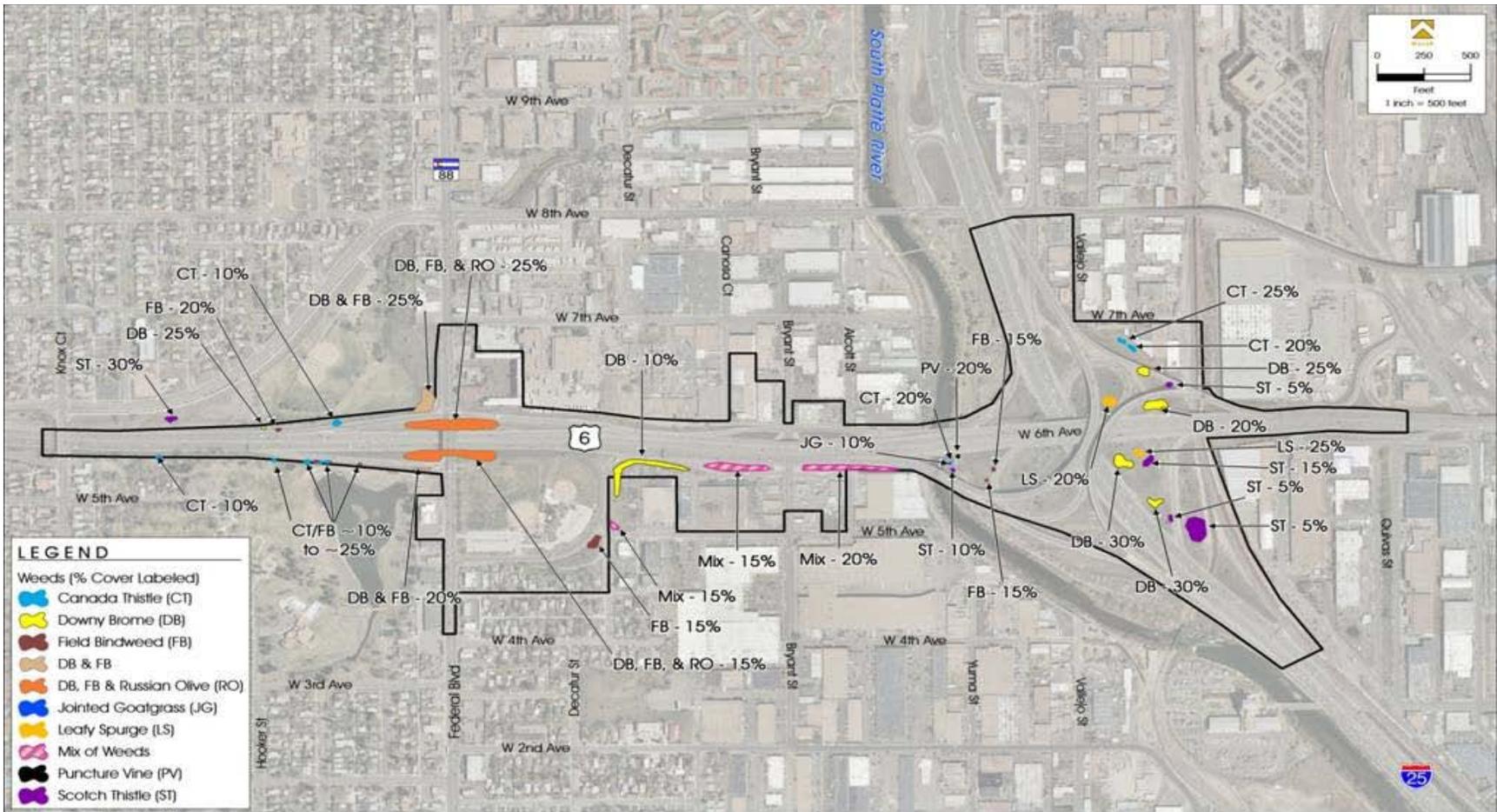


Figure 1

5.0 Noxious Weed Survey Results

This section includes a noxious weed inventory and description of preventative and control measures that will be implemented during the construction of the project. The noxious weeds considered in this management plan include those managed by CCD and the State of Colorado.

A total of eight plant species designated as noxious weeds by the State of Colorado were found in the Project Area, including five “List B” species and three “List C” species. No “List A” species were found. All of the noxious weeds found in the Project Area are listed in Table 1 along with their listing status, including the CCD list (CCD 2011), CDOT Noxious Weed List (CDOT 2006), and the Colorado Department of Agriculture Division of Plant Industry list (CDA 2003).

According to the 2011 BNSF Biological Review Memo provided by Wilson & Company (Appendix B), no noxious weed species were found around in the vicinity of the BNSF Bridge.

Table 1 Noxious Weeds Present in the Project Area

Common Name	Scientific Name	CDA: List A, B, or C	CCD	CDOT	Density
Canada Thistle	<i>Cersium arvense</i>	B	X	X	Scattered
Jointed Goatgrass	<i>Aegilops cylindrical</i>	B		X	Uncommon
Leafy Spurge	<i>Euphorbia esula</i>	B	X	X	Common
Russian Olive	<i>Elaeagnus angustifolia</i>	B		X	Scattered
Scotch Thistle	<i>Onopordum acanthium</i>	B	X	X	Uncommon
Downy Brome	<i>Bromus tectorum</i>	C			Common
Field Bindweed	<i>Convolvulus arvensis</i>	C			Common
Puncture Vine	<i>Tribulus terrestris</i>	C			Scattered

6.0 General Noxious Weed Management Strategies

The following general management strategies will be implemented to prevent the spread of noxious and invasive weeds and safely control weeds within the US 6 Bridges Design Build Project area:

- Staging of construction equipment will not be permitted in weed-infested areas.
- Clean all construction equipment before off-loading at the project site and after working within weed-infested areas.
- Use a state-licensed herbicide applicator for all herbicide treatments.
- Application of herbicides immediately within and adjacent to active black-tailed prairie dog colonies will not be allowed.
- Certified weed-free straw bales will be used for sediment barriers.
- Revegetate all disturbed areas with an appropriate certified weed free native seed mix.

- Fertilizer will not be used in seeded areas because it can enhance the growth of noxious weeds at the expense of desired vegetation.
- Imported topsoil should be certified weed free.
- Herbicides can be used immediately adjacent to wetlands, riparian areas, and/or water bodies in the project area only if the label indicates its use is appropriate for such areas. This is extremely important as some herbicides are toxic to aquatic life.
- Avoid all herbicide impacts to adjacent riparian areas (South Platte River) and landscaping.
- Keep on site all topsoil which is collected from the site and which is to be reapplied after construction to prevent dispersal of weed seeds and cuttings. If topsoil remains stockpiled for more than one month, the stockpile should be seeded with annual grasses.
- When possible, employ mechanical control methods such as removal with construction machinery for species such as Russian olive and field bindweed.
- Conduct noxious weed surveys immediately prior to, during, and immediately after construction.
- Following construction, the site should be monitored for noxious weeds at least twice during the growing season.

7.0 Specific Noxious Weed Control Measures

Table 2 presents specific recommended control measures for the noxious weeds identified in the October 2011/May 2012 field surveys. Timing of the cultural management or herbicide treatment is dependent on the emergence and growth cycle of specific species.

Table 2 Noxious Weeds Recommended Control Measures

Common Name	Scientific Name	Recommended Control Measures
Canada Thistle	<i>Cersium arvense</i>	Cultural management (enhanced competition from desirable species); Monthly mechanical mowing and/or cultivation to prevent bolting; Biological control by grazing and experimental insects such as the seedheaded weevil (<i>Rhinocyllus conicus</i>). Herbicides that can be applied in early spring before budding include: Aminopyralid (Milestone), Chlorsulfuron (Telar DF), Clopyralid + 2,4-D (Redeem R&P) , Picloram (Tordon 22K).
Jointed Goatgrass	<i>Aegilops cylindrical</i>	No control measures found
Leafy Spurge	<i>Euphorbia esula</i>	Cultural management may include the establishment of selected grasses. Mechanical control by mowing will reduce seed production if repeated every 2 to 4 weeks during the growing season. Biological control with flea beetles <i>Apthona nigriscutis</i> , <i>A. lacertosa</i> , and <i>A. cyparissiae</i> especially when combined with grazing and/or herbicides. The following are recommendations for herbicides that can be applied: Fosamine (Krenite S), Picloram (Tordon 22K), imazapic (Plateau).
Russian Olive	<i>Elaeagnus angustifolia</i>	Mechanical removal including mowing hedges with a brush type mower, followed by removal of cut material. Stump sprouting commonly occurs after cutting down the tree, and excavation of the entire stump can trigger root sprouting.
Scotch Thistle	<i>Onopordum acanthium</i>	Mechanical or physical method that severs the root below the soil surface will kill Scotch thistle. Mowing or chopping is most effective when Scotch thistle plants are at full-bloom. Establishment of selected grasses can be an effective cultural control of Scotch

		thistle. Biological control is the <i>Urophora stylata</i> , a fly predator. Chemical control is most effective when plants are in rosette stage, spring or early fall. Application of herbicides that can be applied include: Picloram (Tordon 22K - *Restricted Use*), Aminopyralid (Milestone), Metsulfuron (Cimarron X-tra).
Downy Brome	<i>Bromus tectorum</i>	Minimize disturbance and enhance desirable species as competition. Biological control with soil bacteria which causes crown rot. Spring applications of herbicides such as glyphosate (Roundup) or imazapic (Plateau).
Field Bindweed	<i>Convolvulus arvensis</i>	Mechanical control by cultivation, grubbing, or covering. Application of herbicides that can be applied include: Clarity + 2,4-D Amine, Tordon 22K, Roundup Ultra.
Puncture Vine	<i>Tribulus terrestris</i>	Herbicides can offer good to excellent control when applied in spring.

8.0 Management Actions & Schedule

As the project moves closer to final design and final ROW impacts are determined, the contractor will be responsible for conducting an additional noxious weed survey. The total acreage of noxious weeds will need to be recalculated and the results will be documented and included as an addendum to this report.

In order to effectively manage noxious weeds, management actions must be implemented in accordance with specific goals and priorities. The goal of this plan is to maintain and improve the health of the ecosystem in the Project Area by avoiding additional spreading of noxious weeds as a result of project construction.

Noxious weed management objectives are intended to support the overall management goal of maintaining the health of the ecosystem. There are two main management objectives and they include:

- Preventing the establishment of new noxious weed populations in the Project Area as a result of project construction.
- Preventing the continued spreading of noxious weeds in the Project Area as a result of project construction.

These objectives will generally be met by implementing the following actions at the project site:

- Follow CDOT Standard Specifications for Road and Bridge Construction controls during the construction of the project (CDOT 2011), including 217 Herbicide Treatment.
- Pre-treat all noxious weed populations in areas where topsoil salvage is planned with proper herbicides based on a Project Special Specification 217.
- Minimize ground disturbance and promptly stabilize any exposed soil to prevent weed establishment.
- Properly revegetate all disturbed areas with the native seeding plan recommended by the CDOT Region 6 Landscape Architect.

Revegetated areas will be monitored for success. If treatments for future weed infestations are required, coordination between the contractor and the CDOT Region 6 Environmental Staff must occur.

APPENDIX 6 – Project Special Specification Section 240 Protection of Migratory Birds

1
SECTION 240
PROTECTION OF MIGRATORY BIRDS
BIOLOGICAL WORK PERFORMED BY A CDOT BIOLOGIST

Section 240 is hereby added to the Standard Specifications for this project as follows:

DESCRIPTION

240.01 This work consists of protecting migratory birds during construction.

MATERIALS AND CONSTRUCTION REQUIREMENTS

240.02 The Contractor shall schedule clearing and grubbing operations and work on structures to avoid taking (pursue, hunt, take, capture or kill; attempt to take, capture, kill or possess) migratory birds protected by the Migratory Bird Treaty Act (MBTA).

(a) *Vegetation Removal.* When possible, vegetation shall be cleared prior to the time active nests are present. Vegetation removal activities shall be timed to avoid the migratory bird breeding season which begins on April 1 and runs to August 31. All areas scheduled for clearing and grubbing between April 1 and August 31 shall first be surveyed within the work limits by a CDOT biologist for active migratory bird nests. The CDOT biologist will also survey for active migratory bird nests within 50 feet outside of the work limits. Project personnel shall enter areas outside CDOT right of way only if a Form 730, *Permission to Enter Property*, has been signed by the property owner. The Contractor shall avoid all active migratory bird nests. The Contractor shall avoid the area within 50 feet of the active nests or the area within the distance recommended by the biologist until all nests within that area have become inactive. Inactive nest removal and other necessary measures shall be incorporated into the work as follows:

1. *Tree and Shrub Removal or Trimming.* Tree and shrub removal or trimming shall occur before April 1 or after August 31 if possible. If tree and shrub removal or trimming will occur between April 1 and August 31, a survey for active nests will be conducted by the CDOT biologist within the seven days immediately prior to the beginning of work in each area or phase of tree and shrub removal or trimming. The Contractor shall notify the Engineer at least ten working days in advance of the need for the CDOT biologist to perform the survey.

If an active nest containing eggs or young birds is found, the tree or shrub containing the active nest shall remain undisturbed and protected until the nest becomes inactive. The nest shall be protected by placing fence (plastic) a minimum distance of 50 feet from each nest to be undisturbed. This buffer dimension may be changed if determined appropriate by the CDOT biologist and approved by the Engineer. Work shall not proceed within the fenced buffer area until the young have fledged or the nests have become inactive.

If the fence is knocked down or destroyed by the Contractor, the Engineer will suspend the work, wholly or in part, until the fence is satisfactorily repaired at the Contractor's expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges, but will be charged as contract time.

2. *Grasses and Other Vegetation Management.* Due to the potential for encountering ground nesting birds' habitat, if work occurs between April 1 and August 31, the area shall be surveyed by the CDOT biologist within the seven days immediately prior to ground disturbing activities. The Contractor shall notify the Engineer at least ten working days in advance of the need for the CDOT biologist to perform the survey.

The undisturbed ground cover to 50 feet beyond the planned disturbance, or to the right of way line, whichever is less, shall be maintained at a height of 6 inches or less beginning April 1 and continuing until August 31 or until the end of ground disturbance work, whichever comes first.

SECTION 240
PROTECTION OF MIGRATORY BIRDS
BIOLOGICAL WORK PERFORMED BY A CDOT BIOLOGIST

If birds establish a nest within the survey area, an appropriate buffer of 50 feet will be established around the nest by the CDOT biologist. This buffer dimension may be changed if determined appropriate by the CDOT biologist and approved by the Engineer. The Contractor shall install fence (plastic) at the perimeter of the buffer. Work shall not proceed within the buffer until the young have fledged or the nests have become inactive.

If the fence is knocked down or destroyed by the Contractor, the Engineer will suspend the work, wholly or in part, until the fence is satisfactorily repaired at the Contractor's expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges, but will be charged as contract time.



- (b) *Work on structures.* The Contractor shall prosecute work on structures in a manner that does not result in a taking of migratory birds protected by the Migratory Bird Treaty Act (MBTA). The Contractor shall not prosecute the work on structures during the primary breeding season, April 1 through August 31, unless he takes the following actions:
- (1) The Contractor shall remove existing nests prior to April 1. If the Contract is not awarded prior to April 1 and CDOT has removed existing nests, then the monitoring of nest building shall become the Contractor's responsibility upon the Notice to Proceed.
 - (2) During the time that the birds are trying to build or occupy their nests, between April 1 and August 31, the Contractor shall monitor the structures at least once every three days for any nesting activity.
 - (3) If birds have started to build any nests, the nests shall be removed before they are completed. Water shall not be used to remove the nests if nests are located within 50 feet of any surface waters.
 - (4) Installation of netting may be used to prevent nest building. The netting shall be monitored and repaired or replaced as needed. Netting shall consist of a mesh with openings that are $\frac{3}{4}$ inch by $\frac{3}{4}$ inch or less.

If an active nest becomes established, i.e., there are eggs or young in the nest, all work that could result in abandonment or destruction of the nest shall be avoided until the young have fledged or the nest is unoccupied as determined by the CDOT Biologist and approved by the Engineer. The Contractor shall prevent construction activity from displacing birds after they have laid their eggs and before the young have fledged.

If the project continues into the following spring, this cycle shall be repeated. When work on the structure is complete, the Contractor shall remove and properly dispose of netting used on the structure.

- (c) *Taking of a Migratory Bird.* The taking of a migratory bird shall be reported to the Engineer. The Contractor shall be responsible for all penalties levied by the U. S. Fish and Wildlife Service (USFWS) for the taking of a migratory bird.

METHOD OF MEASUREMENT

240.03 Removal of nests will be measured by the actual number of man-hours spent removing inactive nests just prior to and during the breeding season, April 1 through August 31. During this period, the Contractor shall submit to the Engineer each week for approval a list of the workers who removed nests and the number of hours each one spent removing nests.

Netting will be measured by the square yard of material placed to keep birds from nesting on the structure. Square yards will be calculated using the length of netting measured where it is attached to the ground and the average height of the netting where it is attached to the structure.

3
SECTION 240
PROTECTION OF MIGRATORY BIRDS
BIOLOGICAL WORK PERFORMED BY A CDOT BIOLOGIST

BASIS OF PAYMENT

240.04 The accepted quantities measured as provided above will be paid for at the contract unit price for each of the pay items listed below that appear in the bid schedule.

Payment will be made under:

Pay Item	Pay Unit
Removal of Nests	Hour
Netting	Square Yard

Payment for Removal of Nests will be full compensation for all work and material required to complete the work.

Payment for netting will be full compensation for all work and material required to complete the item. Overlaps of netting will not be measured and paid for separately, but shall be included in the work. Maintenance and replacement, removal, and disposal of netting will not be measured and paid for separately, but shall be included in the work.

Clearing and grubbing will be measured and paid for in accordance with Section 201. Mowing will not be measured and paid for separately, but shall be included in the work.

Removal and trimming of trees will be measured and paid for in accordance with Section 202.

Fence (Plastic) will be measured and paid for in accordance with Section 607.



INSTRUCTIONS TO DESIGNERS (delete instructions and symbols from final draft):

Include this special provision on all projects involving migratory birds and earthwork, soil disturbance, or structure work that will be surveyed by the CDOT biologist. This includes, but is not limited to roadway earthwork, bridge demolition or construction, new signing, new lighting, new guardrail posts, erosion control, and minor drainage. Use of CDOT Maintenance personnel or others to remove nests without fledglings before construction must be coordinated with Region Environmental personnel.

Coordinate with Region Environmental personnel to determine if Wildlife Biologist duties can be completed internally. Region Environmental personnel should coordinate with design project manager to show inactive bird nests and potential nesting habitat in the plans via table or site drawing. If these activities cannot be done by CDOT personnel, then use the alternative special provision that requires the Contractor to provide a wildlife biologist.

The CDOT Biologist will record location of each protected nest, bird species, protection method used, and date installed. A copy of these records will be provided to the Engineer.

A signed Form 730, *Permission to Enter Property*, must be obtained to facilitate CDOT Biologist's and project personnel's ground surveys within adjacent property (area within 50 ft of work limits) that Region Environmental Personnel have determined ground nesting bird habitat may be present. If Permission to Enter Property is denied by a property owner, document due diligence.

◆Include the following paragraph when Region Environmental Personnel have determined that Bald Eagle roosts may be present:

The CDOT Biologist will conduct dusk and dawn surveys of Bald Eagle roosts within seven days prior to the start of any construction during the winter season, November 15 to March 15. If a Bald Eagle roost is identified, construction activity shall not proceed within 0.25 mile of active nocturnal roost sites between November 15 and March 15.