

# I-70 Floyd Hill to Veterans Memorial Tunnels Wetlands and Aquatic Resources Delineation

November 2022



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## ACRONYMS

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above mean sea level	amsl
Antecedent Precipitation Tool	APT
Clean Water Act	CWA
Colorado Department of Transportation	CDOT
Construction Manager/General Contractor	CMGC
Environmental assessment	EA
facultative	FAC
facultative wetlands	FACW
Federal Highway Administration	FHWA
Finding of No Significant Impact	FONSI
geographic information system	GIS
global positioning system	GPS
hydrologic unit code	HUC
Interstate 70	I-70
mile	mi
National Hydrography Dataset	NHD
National Wetland Inventory	NWI
Natural Resources Conservation Service	NRCS
obligate	OBL
ordinary high water mark	OHWM
Palmer Drought Severity Index	PSDI
United States Army Corps of Engineers	USACE
United States Fish and Wildlife Service	USFWS
United States Geologic Survey	USGS
United States Highway 6	US 6
waters of the US	WUS

## 1.0 Introduction

In July 2021, the Colorado Department of Transportation (CDOT) and Federal Highway Administration (FHWA) released an Environmental Assessment (EA) for the Interstate 70 (I-70) Floyd Hill to Veterans Memorial Tunnels Project (Project). Since the release of the EA, CDOT has been following a Construction Manager/General Contractor (CMGC) process for Project delivery. The purpose of the CMGC process is to optimize efficiency in design, schedule, and cost, minimize environmental impacts, manage risk, and ensure constructability.

Design innovations that have been identified through the CMGC process have resulted in refinements to the EA Preferred Alternative, which are described and illustrated in the *I-70 Floyd Hill to Veterans Memorial Tunnels Project Finding of No Significant Impact* (FONSI). The FONSI conveys the FHWA and CDOT decision to implement the CMGC Refined Preferred Alternative for the Project, provides updates to the Project since the release of the EA, and describes and evaluates the innovations (design modifications and refinements) included in the Project after the EA Preferred Alternative was published.

Wetlands and waters of the US were re-delineated in August of 2022 for the Central and West Sections of the Project to support the environmental reevaluation and future Section 404 permitting. This report documents the methods, results, and conclusions of the updated survey. It is used to determine the presence of potentially jurisdictional waters of the United States (WUS). The delineated wetland boundaries were used to evaluate impacts of the design modifications of the CMGC Refined Preferred Alternative as documented in the FONSI.

## 2.0 Methods

This section summarizes the methods used to perform the desktop review and field survey.

### 2.1 Desktop Review

The Project is located approximately 22 miles west of Denver in Clear Creek County (**Figure 1** in **Appendix A**). The Survey Area was formed by buffering expected Project work areas. As shown on **Figure 2** in **Appendix A**, it lies within the United States Geological Survey (USGS) quadrangle map Squaw Pass, which was reviewed for drainage features. The Project lies within the Clear Creek watershed and the river ranges in elevation from about 7,380 feet above mean sea level (amsl) at the western end of the Survey Area to 7,200 feet in the eastern end.

The Survey Area falls within the 10th-level Hydrologic Unit Code (HUC) Middle Clear Creek watershed (HUC10 1019000402), and more locally within the 12th-level City of Idaho Springs- Clear Creek watershed (HUC12 101900040207, **Figure 3** in **Appendix A**). Geographic Information Systems (GIS) data from the National Wetlands Inventory (NWI) (United States Fish and Wildlife Service [USFWS], 2022) and National Hydrology Dataset (NHD) (USGS, 2022) were overlaid on the Survey Area to identify a set of preliminary potential aquatic resources.

Aerial images available through ArcGIS online services (ESRI, 2022) were reviewed to identify features in addition to those shown in the NWI and NHD datasets that should be investigated for WUS during the field survey. No additional features were identified as part of this effort.

The Antecedent Precipitation Tool (APT) (United States Army Corps of Engineers [USACE], 2022) was used to compare precipitation in the 90 days prior to the field surveys against historical precipitation

records. The APT determined the area was in wetter than normal in the months prior to survey; however, long-term conditions were still dry with a Palmer Drought Severity Index (PDSI) of Extreme Drought (Appendix B).

Natural Resources Conservation Service (NRCS) soil survey data was acquired for the Survey Area (Figure 4 in Appendix A) (NRCS, 2022). The NRCS data indicates five primary soil types (Table 1). The majority of the area is Cathedral-Rock Outcrop, Resort-Cathedral-Rock Outcrop, and Mammoth-Ohman-Rock Outcrop complexes. Overall, soils are rocky and coarser-textured derived from the eroding hillsides. None of the soils are indicated as hydric; however, alluvial deposits associated with the creek are too localized to be mapped.

**Table 1 – Soils**

Soil Type	Typical Profile <sup>1</sup>	Parent Material	Landform	Drainage	Hydric Rating
Rock outcrop-Cathedral-Resort complex, 30 to 70 percent slopes	R - 0 to 60 inches: unweathered bedrock	Igneous and metamorphic Rock	Ridges, mountain slopes, cliffs	Well drained	No
Cathedral-Rock outcrop complex, 30 to 70 percent slopes	A - 0 to 3 inches: very cobbly coarse sandy loam AB - 3 to 6 inches: very gravelly sandy loam Bw - 6 to 11 inches: very gravelly sandy loam R - 11 to 15 inches: unweathered bedrock	Micaceous residuum	Mountain slopes, cliffs, ridges	Well drained	
Mammoth-Ohman- Rock outcrop complex, 30 to 60 percent slopes	Oi - 0 to 1 inches: slightly decomposed plant material E - 1 to 10 inches: very gravelly sandy loam E and Bt1 - 10 to 16 inches: gravelly loam E and Bt2 - 16 to 22 inches: very gravelly loamy sand E and Bt3 - 22 to 32 inches: very gravelly sandy loam E and Bt4 - 32 to 59 inches: very gravelly sandy loam C - 59 to 67 inches: stony loamy coarse sand	Micaceous colluvium	Mountain slopes	Well drained	No

Soil Type	Typical Profile <sup>1</sup>	Parent Material	Landform	Drainage	Hydric Rating
Arents-Dumps, mine complex, 5 to 80 percent slopes	C1 - 0 to 24 inches: very cobbly loamy coarse sand C2 - 24 to 28 inches: gravelly sandy loam C3 - 28 to 33 inches: extremely cobbly loamy sand C4 - 33 to 60 inches: extremely cobbly loamy sand	Mine spoil or earthy fill	Mountain slopes	Somewhat excessively drained	No
Resort-Cathedral-Rubble land complex, 30 to 60 percent slopes	Oi - 0 to 1 inches: slightly decomposed plant material A1 - 1 to 6 inches: very stony sandy loam A2 - 6 to 14 inches: extremely cobbly loamy sand Cr - 14 to 18 inches: weathered bedrock	Micaceous sandy residuum	Ridges, mountain slopes	Somewhat excessively drained	No

1 O = Organic horizon; A = Topsoil or surface mineral horizon; B = Horizon of soil development; E = Horizon depleted of organic matter and nutrients; C = Soil parent material; R = Bedrock

## 2.2 Field Survey

The field survey was performed on July 26 and 27, August 2, and September 7, 2022. The objectives of the survey were to:

- Investigate all potential waters shown in the NWI and NHD datasets to determine if wetland or ordinary high water mark (OHWM) indicators are present.
- Investigate all additional potential waters that were identified on aerial images to determine if wetland or OHWM indicators are present.

Using aerial images, NWI and NHD mapping, and visual observations, biologists performed a pedestrian survey throughout the Survey Area. All potential waters were examined for the presence of wetland and OHWM indicators. Wetlands were evaluated in accordance with the Wetland Delineation Manual (USACE, 1987) and Western Mountains, Valleys, and Coast Region, Regional Supplement (USACE, 2010). Methods for identification of the OHWM followed USACE guidance for the mountain west (USACE, 2014). Photo points and OHWMs were mapped using a handheld global positioning system (GPS) unit with submeter accuracy.

### 3.0 Results

A total of 38 aquatic resources were mapped within the Survey Area. Of those 38 resources, 33 are wetlands and 5 are non-wetland waters. Common wetland vegetation is presented in **Table 2**

2. **Table 3** presents the summary information for the 33 wetlands; **Table 4** presents the five non-wetland waters. Wetlands were given unique identifiers, e.g., WL1, to facilitate reference. Non-wetland waters, unless named, were given Other Waters (OW) identifiers. All mapped features are shown on **Figure 5** in **Appendix A**. Wetland datasheets from **Appendix C** and **Photo Points** indicated on **Figure 5** correspond to photos in **Appendix D**. Features are presented west- to-east.

**Table 2 - Common Wetland Vegetation**

Scientific Name	Common Name	Indicator Status <sup>1</sup>
<i>Agrostis stolonifera</i>	Spreading Bent	FAC
<i>Betula occidentalis</i>	Water Birch	FACW
<i>Calamagrostis canadensis</i>	Bluejoint	FACW
<i>Carex aquatilis</i>	Leafy Tussock Sedge	OBL
<i>Carex nebrascensis</i>	Nebraska Sedge	OBL
<i>Eleocharis palustris</i>	Common Spike-Rush	OBL
<i>Equisetum arvense</i>	Field Horsetail	FAC
<i>Juncus balticus</i>	Baltic Rush	FACW
<i>Juncus dudleyi</i>	Dudley's Rush	FAC
<i>Populus angustifolia</i>	Narrow-Leaf Cottonwood	FACW
<i>Salix bebbiana</i>	Gray Willow	FACW
<i>Salix exigua</i>	Narrow-Leaf Willow	FACW

<sup>1</sup>OBL = Obligate, Plants that occur almost always in wetlands under natural conditions; FACW = Facultative Wetland, Plants that occur usually in wetlands, but also occur in non-wetlands; FAC = Facultative, Plants with similar likelihood of occurring in both wetlands and non-wetlands

### 3.1 Wetlands

As the Survey Area is narrowly focused around Clear Creek, wetlands are primarily associated with the creek. Most wetlands are small, less than 0.10 acre, and are confined to the banks and immediate floodplain. Narrow-leaf willow, water birch, and gray willow are the most common hydric shrub species, while Baltic rush, Nebraska sedge, and leafy tussock sedge are common herbaceous species (**Table 2**). Soils are typically shallow, sandy alluvial deposits that in many instances lacked hydric soils indicators due to their young age. Where soil was present, i.e., more than cobbles or rip rap, in locations that typically support hydric soil conditions, hydric soils were granted as Problematic Soils, and noted on the datasheet. Wetland hydrology is primarily associated with the perennial Clear Creek, presenting as shallow water table and saturation.

Wetlands WL1 through WL4 are small wetlands near the Veterans Memorial Tunnels (**Figure 5, Sheet 1, in Appendix A, and Photo Points 1 through 3 in Appendix D**). Hydric vegetation and soils are limited to the narrow floodplain that quickly transitions to uplands. As Clear Creek turns east after

the tunnels, it enters a heavily-channelized reach for about a half mile. **Photo Points 4 and 5** illustrate this condition precluding the development of fringe or floodplain wetlands through this reach.

**Figure 5, Sheet 2** presents the bend in the creek at the Central City exit off I-70. Wetlands are present on the outside bend (WL5, WL6, WL10, and WL13) as well as the inside bend (WL7, WL8, WL9, WL11, WL12, WL 14, and WL15, **Photo Points 6 through 14**).

Downstream (east) of the Central City exit, Clear Creek enters more channelized reaches (**Figure 5, Sheet 3**). Wetlands WL16, WL17, and WL18 (**Photo Points 15 and 16**) line both banks before an 1,100-foot reach stabilized with rip rap on both banks (**Photo Point 17**). Following the channelized reach, WL19 (island) and WL20 (inside bend) are present at a bend (**Photo Points 18 and 19**).

**Photo Point 20** on **Figure 5, Sheet 4** shows another channelized 1,500-foot reach of Clear Creek stabilized by rip rap along I-70 on the left bank and a trail/utility line that follows the right bank. More natural floodplains are present downstream of this reach, supporting wetlands WL21 through WL25 around a bend (**Photo Points 22 through 25**).

The creek enters another channelized reach of about 2,000 feet (**Photo Point 26**) before reaching a bend at the US 6 interchange (**Figure 5, Sheet 5**). Most of this reach has been channelized by rip rap on both banks, with some concrete walls supporting roadway infrastructure. A small wetland, WL26 (**Photo Point 27**), lies on the outside bend, but most of this reach does not support wetland development (**Photo Point 28**). Channelized conditions continue downstream (**Figure 5, Sheet 6, Photo Point 29**).

Wetlands WL27 through WL31 are located around a bend in the creek (**Figure 5, Sheet 6, Photo Points 30 and 31**). WL30, on the inside bend, is the largest wetland in the Survey Area at 0.55 acres.

**Table 3 – Wetlands**

Feature/ Data Point	Acres within Survey Area	Latitude	Longitude	Reference Datasheet	Cowardin Classification <sup>1</sup>
WL1	0.01	39.74353	-105.47327	WL1	PSS
WL2	0.01	39.74799	-105.47339	WL2	PSS
WL3	0.01	39.743814	-105.47323	WL1	PSS
WL4	0.01	39.74457	-105.47308	WL4	PSS
WL5	0.02	39.74690	-105.46507	WL5	PSS
WL6	0.01	39.74766	-105.46459	WL6	PEM
WL7	0.34	39.74831	-105.46299	WL7	PSS
WL8	0.02	39.748220	-105.46297	WL8	PEM
WL9	0.04	39.74819	-105.46233	WL9	PSS
WL10	0.32	39.74807	-105.46152	WL10	PSS
WL11	0.01	39.74797	-105.46181	WL11	PSS
WL12	0.11	39.74742	-105.46106	WL12	PSS
WL13	0.05	39.747196	-105.46045	WL10	PSS
WL14	0.04	39.74677	-105.46036	WL14	PSS
WL15	0.01	39.74675	-105.46044	WL15	PEM
WL16	0.30	39.74482	-105.45785	WL16	PSS



Feature/ Data Point	Acres within Survey Area	Latitude	Longitude	Reference Datasheet	Cowardin Classification <sup>1</sup>
WL17	0.02	39.74483	-105.45814	WL17	PSS
WL18	0.01	39.74460	-105.45774	WL17	PSS
WL19	0.08	39.74291	-105.45399	WL19	PSS
WL20	0.20	39.74282	-105.45303	WL20	PSS
WL21	0.05	39.74372	-105.49604	WL21	PSS
WL22	0.02	39.74324	-105.44537	WL22	PSS
WL23	0.11	39.743071	-105.44396	WL23	PSS
WL24	0.13	39.74275	-105.44379	WL24	PSS
WL25	0.20	39.74291	-105.44324	WL23	PSS
WL26	0.01	39.74642	-105.43599	WL26	PEM
WL27	0.01	39.742229	-105.43135	WL27	PEM
WL28	0.01	39.74198	-105.43143	WL27	PEM
WL29	0.01	39.74185	-105.43145	WL27	PEM
WL30	0.55	39.741443	-105.43098	WL31	PSS
WL31	0.04	39.741726	-105.43085	WL31	PSS
WL32	0.24	39.737890	-105.43249	WL32	PEM
WL33	0.10	39.737889	-105.43258	WL33	PSS
<b>Total</b>	<b>3.06</b>				

1 PEM = Palustrine Emergent; PSS = Palustrine Scrub-Shrub

Johnson Gulch is an intermittent stream that flows to the east, meeting I-70 at the southern end of the Study Area (**Figure 5, Sheet 7**). Where the gulch meets the highway, a culvert conveys flow under the road; however, the inlet is partially blocked, creating wetlands WL32 and WL33 (**Photo Points 32 and 33**). There is no channel on the upstream (west) side of I-70; however, Johnson Gulch continues at the downstream side of the culvert, see **Section 3.2**.

### 3.2 Non-Wetland Waters

Five non-wetland waters were mapped: four stream channels and one pond. **Table 4** presents the details for each feature.

Clear Creek is a perennial river that passes through the entire Survey Area. The creek ranges from about 30 feet wide at narrow, channelized reaches, to 150 feet at the wide bends. The creek totals 3.0 miles and 18.3 acres within the Survey Area (**Figure 5, Sheets 1 through 6**). OHWMs include a clear bank and change in vegetation. Where the banks have been stabilized with rip rap, the OHWM is indicated by staining on the rocks.

**Table 4 – Non-Wetland Waters**

Feature	Linear Feet within Survey Area	Width (Feet)	Acres within Survey Area	Latitude	Longitude	Cowardin Classification <sup>1</sup>
Clear Creek	15,865	50	18.44	39.74424	-105.44761	R5UBH
OW1	NA	NA	0.26	39.74781	-105.46406	PUBH
Sawmill Gulch	607	3	0.04	39.74295	-105.4485	R5UBH
OW2	164	4	0.03	39.74249	-105.44381	R5UBH
Johnson Gulch	65	3	0.07	39.73882	-105.43046	R5UBH
		<b>Total</b>	<b>18.84</b>			

<sup>1</sup> R5UBH = Riverine Unknown Perennial Unconsolidated Bottom Permanently Flooded; PUBH = Palustrine

Unconsolidated Bottom. Sawmill Gulch, OW2, and Johnson Gulch are indicated as perennial in the NWI; however, they are intermittent (R4).

A 0.27-acre pond, OW1, is part of the City of Blackhawk’s water supply system (**Figure 5, Sheet 2**). The artificial pond is fed by an inlet in the right bank of the creek and is drained by an outlet at the downstream end. The pond is rip rap lined and does not support fringe wetlands.

Sawmill Gulch is an intermittent stream flowing north to Clear Creek (**Figure 5, Sheet 4, Photo Point 21**). The gulch is about 607 feet long within the Survey Area, totaling 1,809 square feet (0.04 acre). OHWMs average three feet wide, indicated by clear bed and bank. The gulch meets a multiuse trail south of Clear Creek and is conveyed via culvert to the creek’s floodplain.

OW2 is an unnamed intermittent drainage that flows north to Clear Creek (**Figure 5, Sheet 4, Photo Point 34**). The drainage is about 164 feet long within the Survey Areas, totaling 1,162 square feet (0.03 acre). OHWMs are three to four feet wide, indicated by clear bed and bank and an incised channel. The gulch meets a multiuse trail south of Clear Creek and is conveyed via culvert to wetland WL24 on the floodplain of Clear Creek.

At the southern end of the Survey Area, Johnson Gulch passes below I-70 (**Figure 5, Sheet 7**). Wetlands WL32 and WL33 are formed on the west side of I-70 where a culvert inlet is partially blocked. There is no channel through this wetland complex. At the outlet on the east side of I-70, a short reach of Johnson Gulch lies within the Survey Area, about 65 feet of channel three feet wide (0.01 acre).

## 4.0 Conclusion

All 33 wetlands and five non-wetland waters are tributaries to or are immediately adjacent to Clear Creek, itself a main tributary to the South Platte River. As such, all mapped aquatic resources would be considered jurisdictional WUS. Impacts to WUS will be authorized pursuant to the Clean Water Act (CWA) as administered by the USACE.

## 5.0 References

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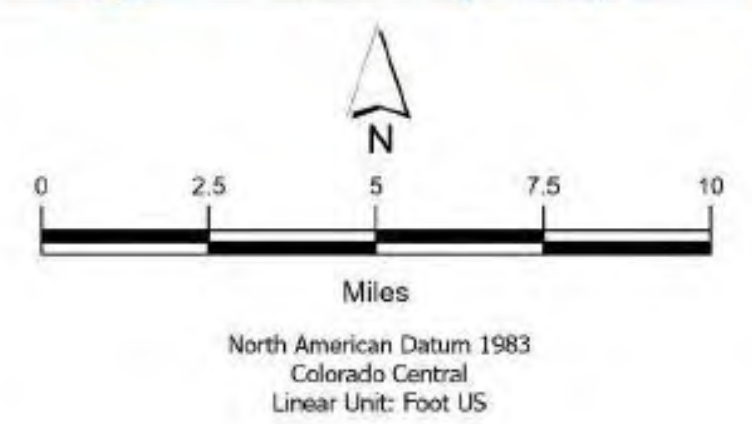
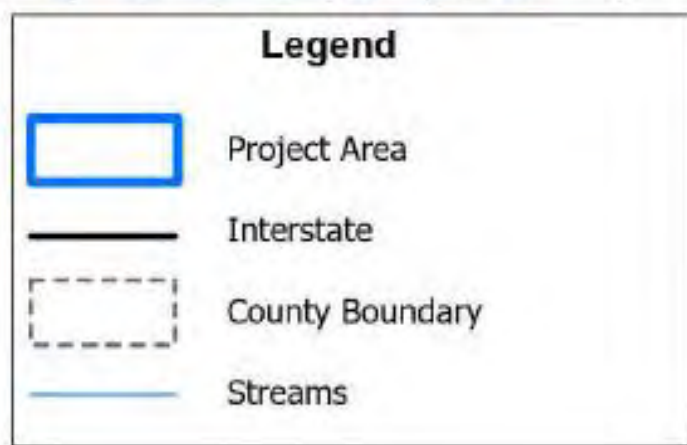
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# Appendix A

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Figures

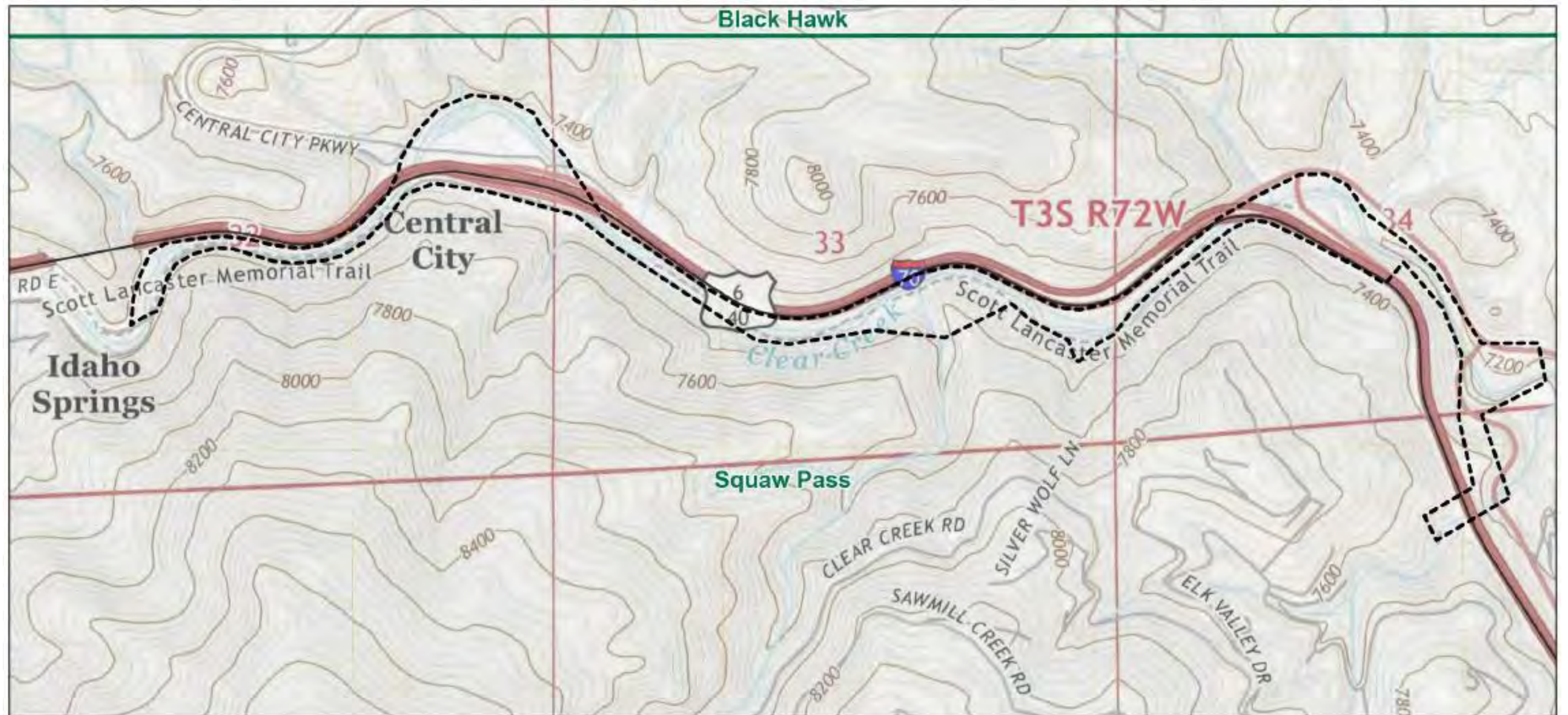


**Floyd Hill to Veterans Memorial Tunnels Project**

**FIGURE 1**  
**PROJECT LOCATION - REGIONAL MAP**

Map Extent: Denver, Adams, Jefferson, Gilpin, and Clear Creek Counties, Colorado

Date: 10-11-2022	Author: MH
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**Legend**

<b>Project Components</b>	<b>Land Jurisdiction</b>
Boundary of Area Surveyed for Jurisdictional Waters of the United States	* All privately-held in figure extent*
<b>General Features</b>	
Interstate	
USGS Quad Background	

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Miles

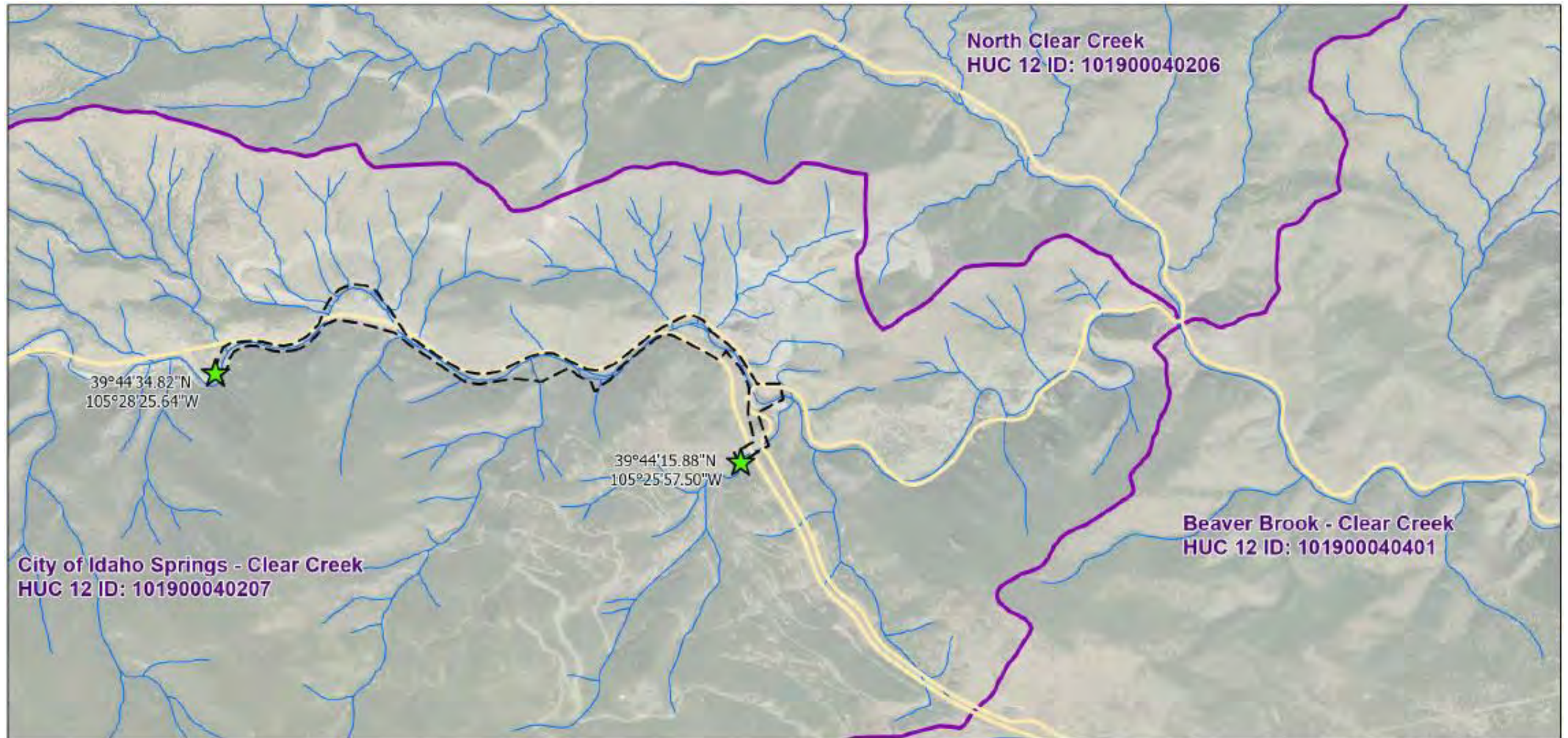
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Colorado Central  
Linear Unit: Foot US

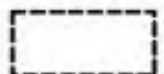




**Floyd Hill to Veterans Memorial Tunnels Project**

**FIGURE 2**  
**PROJECT LOCATION**


Map Extent: Clear Creek, Jefferson, and Gilpin Counties, Colorado

Date: 10-11-2022	Author: MH
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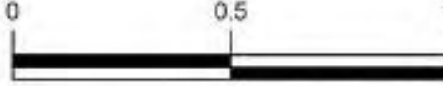


Legend	
	Boundary of Area Surveyed for Jurisdictional Waters of the United States
	Control Point
	Highway
Hydrology	
	HUC-12 Watershed Boundaries
	NHD Flowlines

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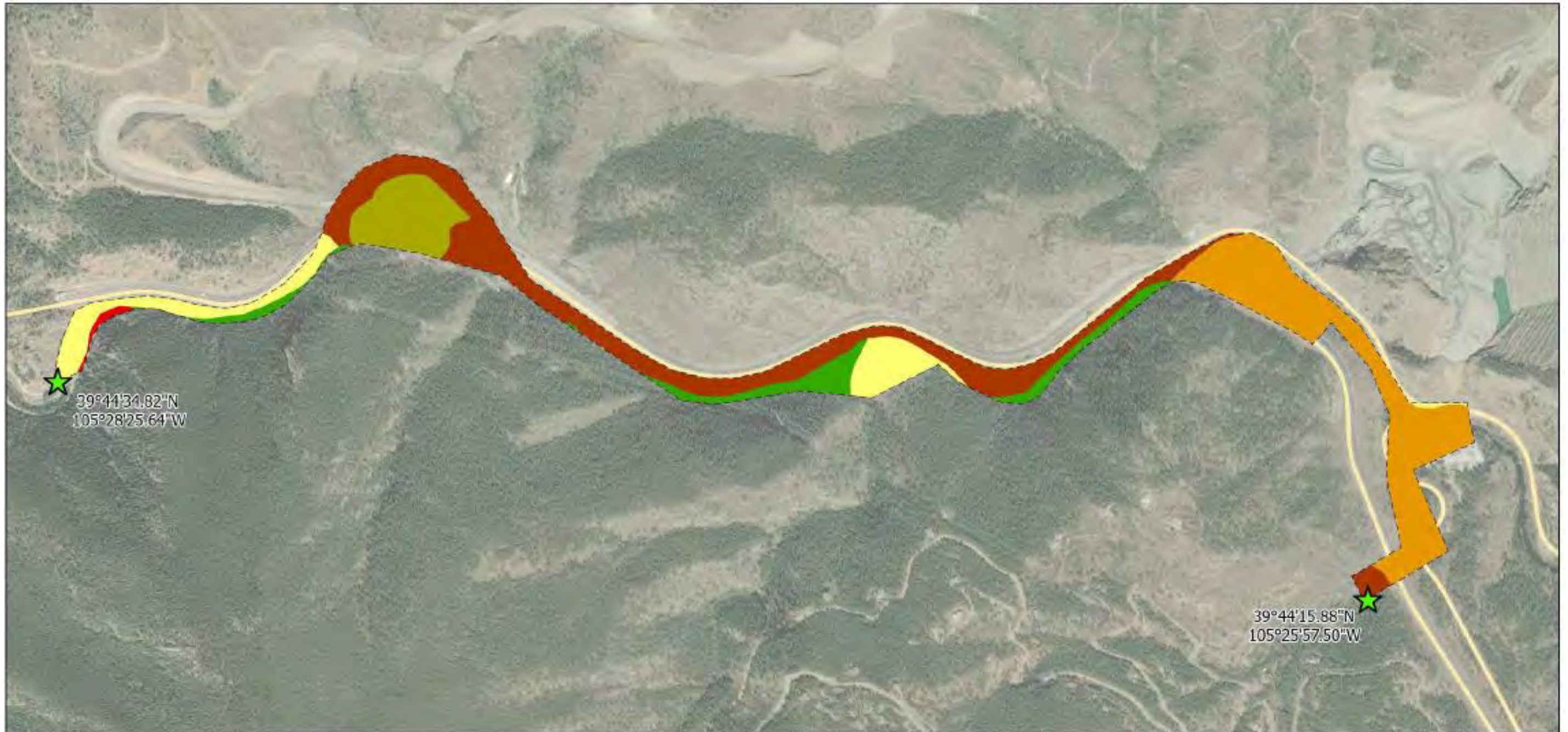


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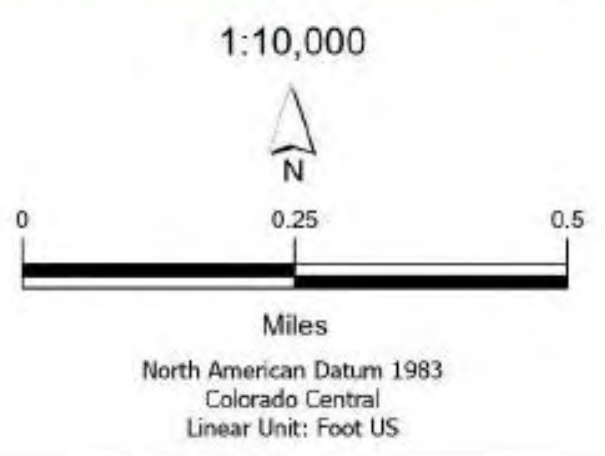
North American Datum 1983  
Colorado Central  
Linear Unit: Foot US

<b>Floyd Hill to Veterans Memorial Tunnels Project</b>	
<b>FIGURE 3 WATERSHEDS</b>	
Map Extent: Clear Creek County, Colorado	
Date: 10-11-2022	Author: MH



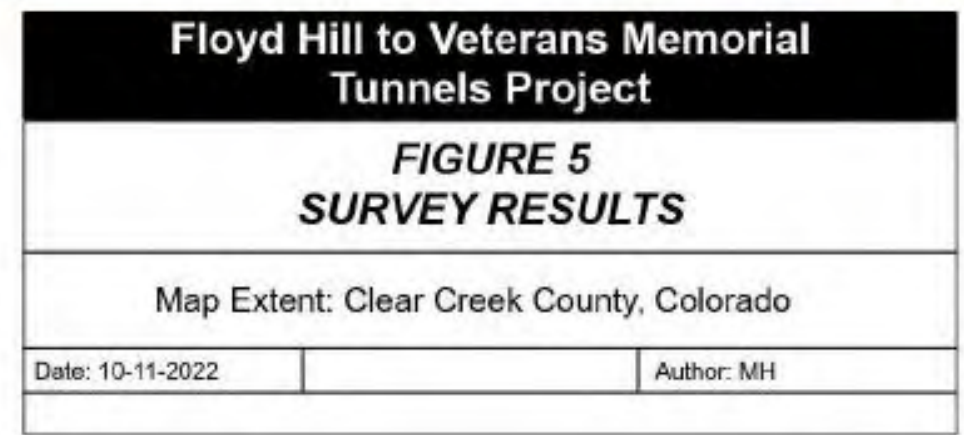
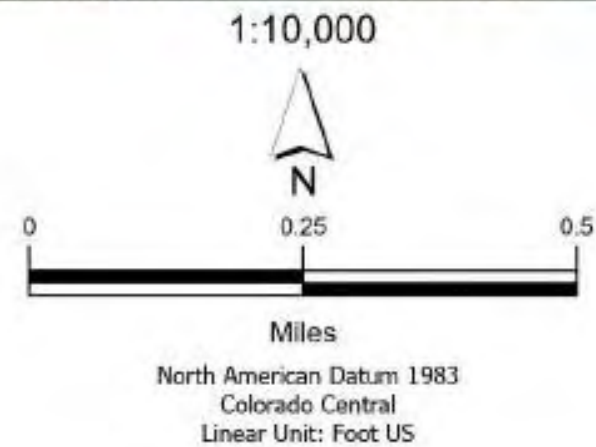
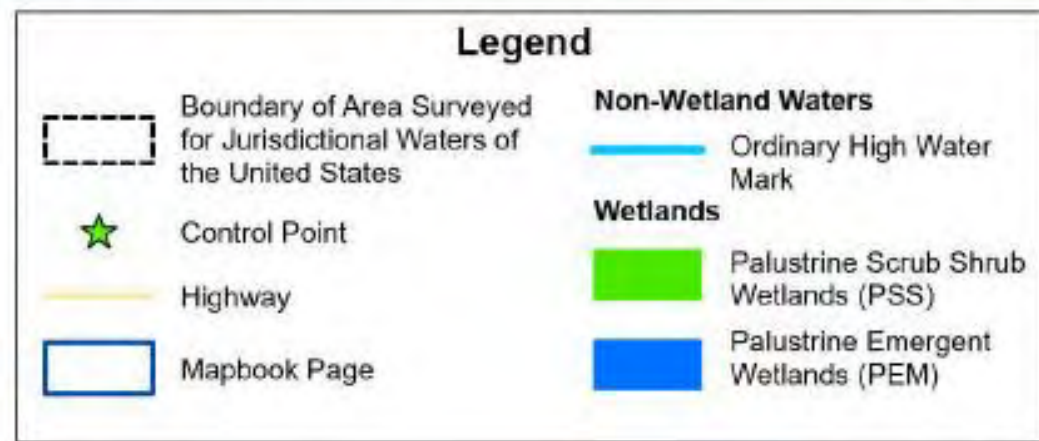
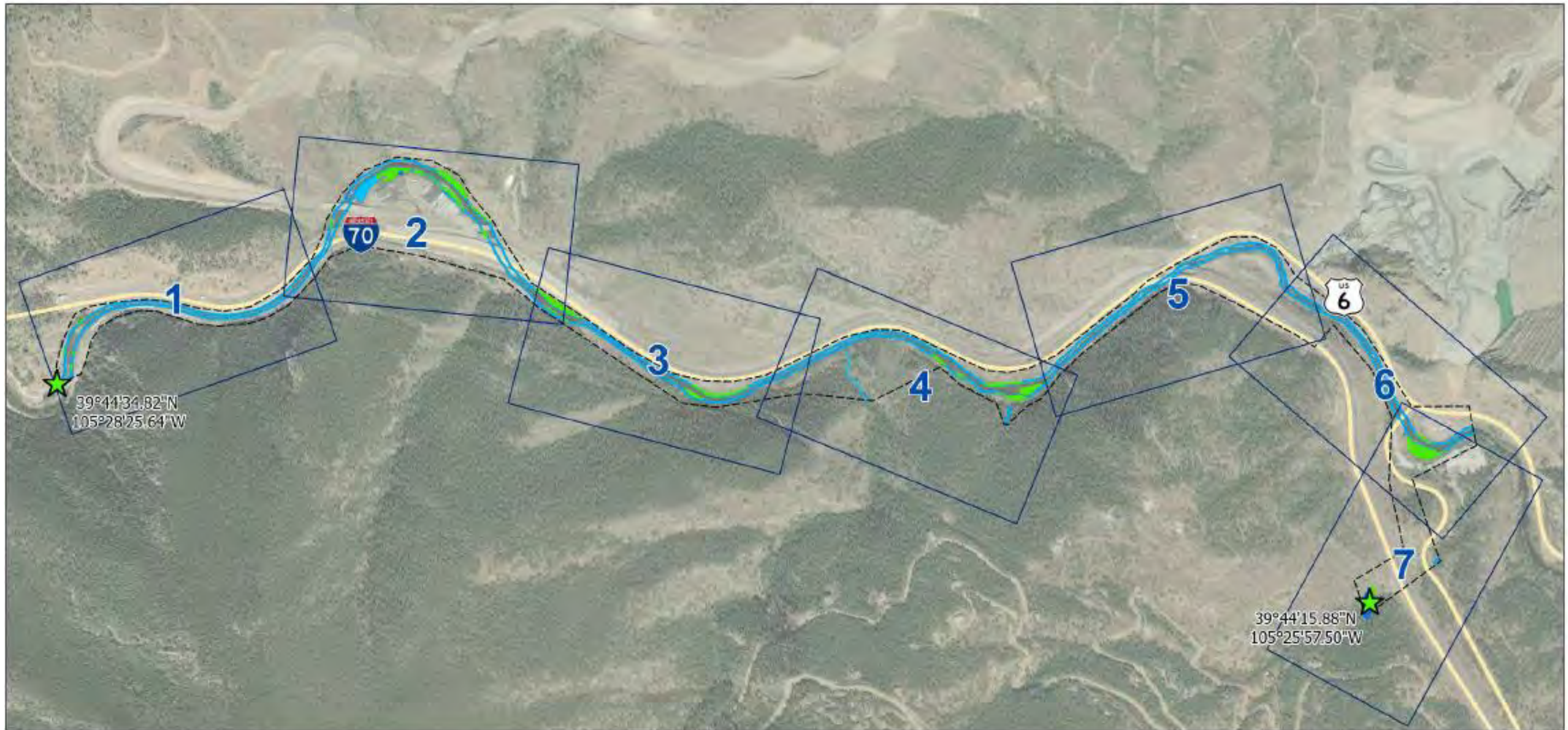
**Legend**

	Boundary of Area Surveyed for Jurisdictional Waters of the United States		Rock outcrop - Cathedral resort complex, 30 to 70 percent slopes
	Control Point		Mammoth-Chman-Bendemeere complex, 30 to 60 percent slopes
	Highway		Cathedral-Rock outcrop complex, 30 to 70 percent slopes
			Rock outcrop - Rubble land - Cathedral complex, 40 to 100 percent slopes
			Resort-Cathedral-Rubble land complex, 30 to 60 percent slopes
			Arents-Dumps, mine complex, 5 to 80 percent slopes



<b>Floyd Hill to Veterans Memorial Tunnels Project</b>	
<b>FIGURE 4 SOIL TYPES</b>	
Map Extent: Clear Creek County, Colorado	
Date: 10-11-2022	Author: MH







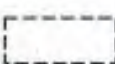





Sheet 1

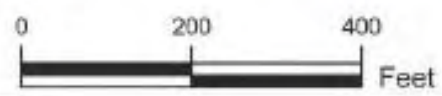


North American Datum 1983  
Colorado Central  
Linear Unit: Foot US



**Legend**

-  Boundary of Area Surveyed for Jurisdictional Waters of the United States
-  Ordinary High Water Mark
-  Palustrine Scrub Shrub Wetlands (PSS)
-  Palustrine Emergent Wetlands (PEM)
-  Photo Point (PP)
-  Data Sheet (DS)



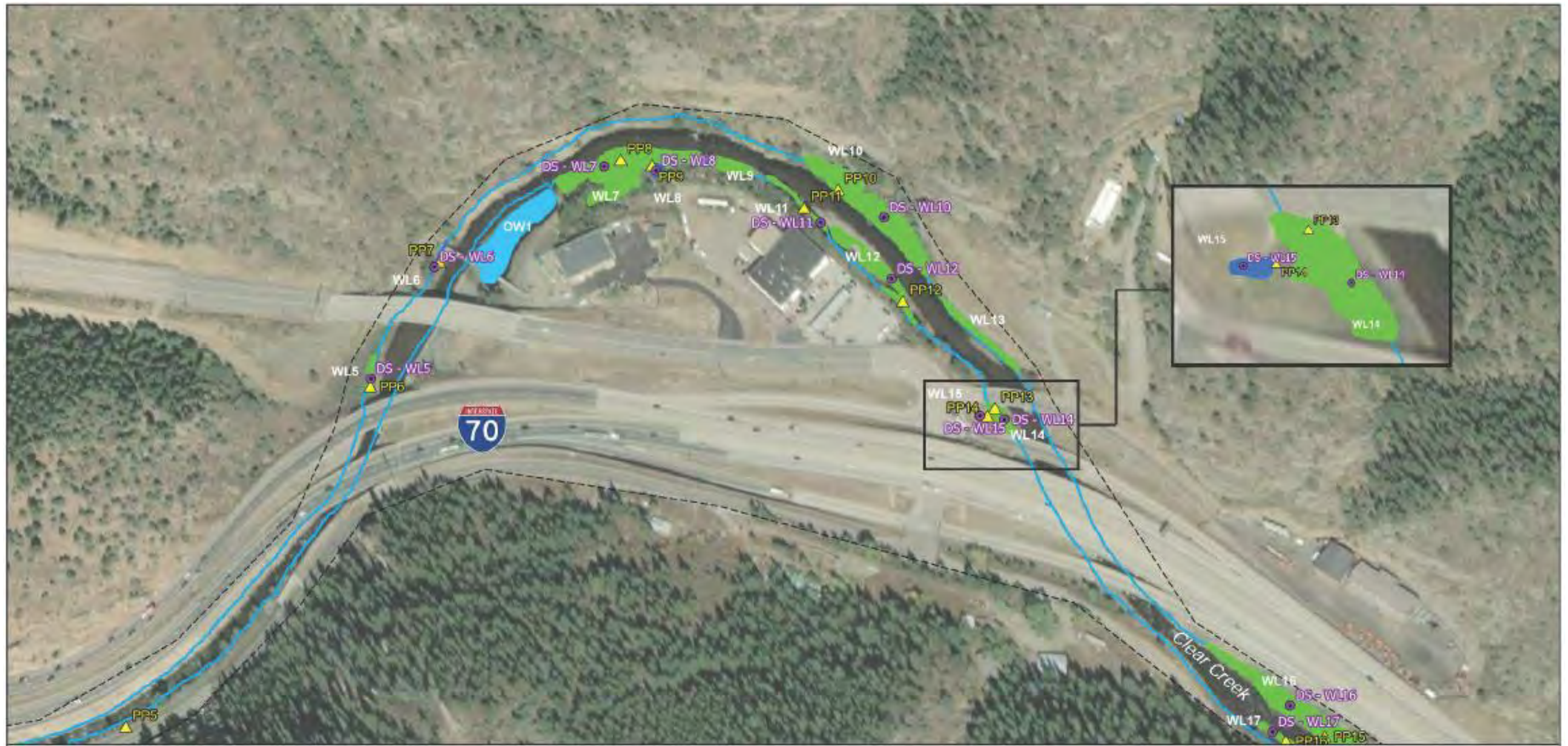
**Floyd Hill to Veterans Memorial  
Tunnels Project**

**FIGURE 5  
SURVEY RESULTS**

Map Extent: Clear Creek County, Colorado

Date: 10-11-2022

Author: MH



Sheet 2

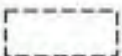







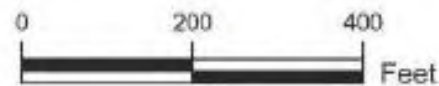
North American Datum 1983  
Colorado Central  
Linear Unit: Foot US



1 inch = 200 feet

**Legend**

-  Boundary of Area Surveyed for Jurisdictional Waters of the United States
-  Ordinary High Water Mark
-  Palustrine Scrub Shrub Wetlands (PSS)
-  Palustrine Emergent Wetlands (PEM)
-  Photo Point (PP)
-  Data Sheet (DS)



**Floyd Hill to Veterans Memorial  
Tunnels Project**

**FIGURE 5  
SURVEY RESULTS**

Map Extent: Clear Creek County, Colorado

Date: 10-11-2022

Author: MH



Sheet 3









North American Datum 1983  
Colorado Central  
Linear Unit: Foot US



1 inch = 200 feet

**Legend**

-  Boundary of Area Surveyed for Jurisdictional Waters of the United States
-  Ordinary High Water Mark
-  Palustrine Scrub Shrub Wetlands (PSS)
-  Palustrine Emergent Wetlands (PEM)
-  Photo Point (PP)
-  Data Sheet (DS)



**Floyd Hill to Veterans Memorial  
Tunnels Project**

**FIGURE 5  
SURVEY RESULTS**

Map Extent: Clear Creek County, Colorado

Date: 10-11-2022

Author: MH



Sheet 4









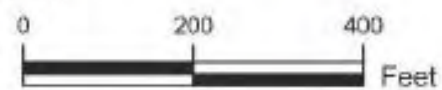
North American Datum 1983  
Colorado Central  
Linear Unit: Foot US



1 inch = 200 feet

**Legend**

-  Boundary of Area Surveyed for Jurisdictional Waters of the United States
-  Ordinary High Water Mark
-  Palustrine Scrub Shrub Wetlands (PSS)
-  Palustrine Emergent Wetlands (PEM)
-  Photo Point (PP)
-  Data Sheet (DS)



**Floyd Hill to Veterans Memorial  
Tunnels Project**

**FIGURE 5  
SURVEY RESULTS**

Map Extent: Clear Creek County, Colorado

Date: 10-11-2022

Author: MH



Sheet 5

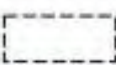







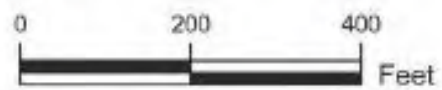
North American Datum 1983  
Colorado Central  
Linear Unit: Foot US



1 inch = 200 feet

**Legend**

-  Boundary of Area Surveyed for Jurisdictional Waters of the United States
-  Ordinary High Water Mark
-  Palustrine Scrub Shrub Wetlands (PSS)
-  Palustrine Emergent Wetlands (PEM)
-  Photo Point (PP)
-  Data Sheet (DS)



**Floyd Hill to Veterans Memorial  
Tunnels Project**

**FIGURE 5  
SURVEY RESULTS**

Map Extent: Clear Creek County, Colorado

Date: 10-11-2022

Author: MH



Sheet 6









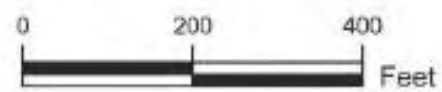
North American Datum 1983  
Colorado Central  
Linear Unit: Foot US



1 inch = 200 feet

**Legend**

-  Boundary of Area Surveyed for Jurisdictional Waters of the United States
-  Ordinary High Water Mark
-  Palustrine Scrub Shrub Wetlands (PSS)
-  Palustrine Emergent Wetlands (PEM)
-  Photo Point (PP)
-  Data Sheet (DS)



**Floyd Hill to Veterans Memorial  
Tunnels Project**

**FIGURE 5  
SURVEY RESULTS**

Map Extent: Clear Creek County, Colorado

Date: 10-11-2022

Author: MH



Sheet 7

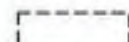







North American Datum 1983  
Colorado Central  
Linear Unit: Foot US



1 inch = 200 feet

**Legend**

-  Boundary of Area Surveyed for Jurisdictional Waters of the United States
-  Ordinary High Water Mark
-  Palustrine Scrub Shrub Wetlands (PSS)
-  Palustrine Emergent Wetlands (PEM)
-  Photo Point (PP)
-  Data Sheet (DS)



**Floyd Hill to Veterans Memorial  
Tunnels Project**

**FIGURE 5  
SURVEY RESULTS**

Map Extent: Clear Creek County, Colorado

Date: 10-11-2022

Author: MH

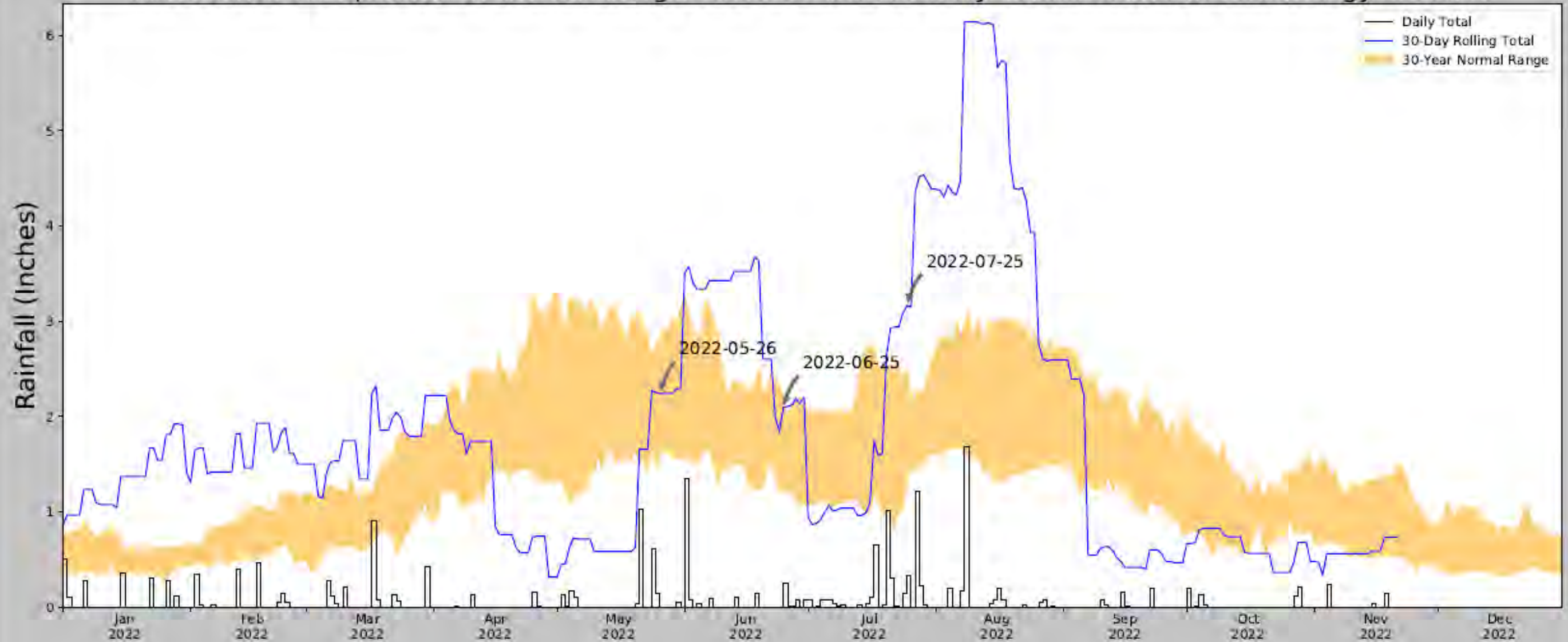


## **Appendix B**

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### **Antecedent Precipitation Tool (APT) Report**

# Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	39.743637, -105.450433
Observation Date	2022-07-25
Elevation (ft)	7275.41
Drought Index (PDSI)	Extreme drought
WebWIMP H <sub>2</sub> O Balance	Dry Season

30 Days Ending	30 <sup>th</sup> %ile (in)	70 <sup>th</sup> %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-07-25	1.364961	2.472047	3.161417	Wet	3	3	9
2022-06-25	1.218898	2.152362	2.094488	Normal	2	2	4
2022-05-26	1.616929	2.848425	2.240158	Normal	2	1	2

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
EVERGREEN	39.6381, -105.315	6984.908	10.248	290.502	7.589	11129	88
EVERGREEN 5.4 NNW	39.704, -105.3854	7729.987	4.41	454.577	3.989	8	1
GENESEE 1 SW	39.6853, -105.2902	7310.04	9.422	34.63	4.566	11	0
IDAHO SPRINGS 1.7 WSW	39.7297, -105.5406	7799.869	4.887	524.459	4.762	23	0
BERGEN PARK 1.1 N	39.7082, -105.3565	7723.097	5.56	447.687	4.991	2	0
GOLDEN 6.4 SSW	39.6726, -105.2749	7224.082	10.543	51.328	5.285	1	0
GOLDEN 1.6 SW	39.7234, -105.2378	7290.026	11.384	14.616	5.289	0	1
GENESEE 1 N	39.7094, -105.2661	7361.877	10.077	86.467	5.406	4	0
EVERGREEN 1.3 NNE	39.6516, -105.3357	7454.068	8.811	178.658	5.539	2	0
GOLDEN 6 NW	39.78, -105.3203	7600.066	7.354	324.656	5.697	16	0
EVERGREEN 3.7 NNW	39.684, -105.3416	7666.995	7.102	391.585	5.977	1	0
EVERGREEN 1.4 ENE	39.6393, -105.3164	7107.94	10.137	167.47	6.259	1	0
GOLDEN 7.8 W	39.7737, -105.3702	8152.887	4.741	877.477	6.293	1	0
INTER CANYON	39.5728, -105.2192	7180.118	17.047	95.292	9.296	151	0



# Appendix C

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Datasheets

**U.S. Army Corps of Engineers**  
**WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region**  
 See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024  
 Requirement Control Symbol EXEMPT:  
 (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/26/22  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL1  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: SW4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 0-1  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74353 Long: -105.47327 Datum: NAD83  
 Soil Map Unit Name: Rock outcrop-Cathedral-Resort complex NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u><i>Pseudotsuga menziesii</i></u>	5	Yes	FACU	
2. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B)
4. _____				
	5 =Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u><i>Salix exigua</i></u>	60	Yes	FACW	
2. _____				OBL species <u>15</u> x 1 = <u>15</u>
3. _____				FACW species <u>80</u> x 2 = <u>160</u>
4. _____				FAC species <u>0</u> x 3 = <u>0</u>
5. _____				FACU species <u>5</u> x 4 = <u>20</u>
	60 =Total Cover			UPL species <u>0</u> x 5 = <u>0</u>
				Column Totals: <u>100</u> (A) <u>195</u> (B)
				Prevalence Index = B/A = <u>1.95</u>
Herb Stratum (Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <input checked="" type="checkbox"/> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>5</u> - Wetland Non-Vascular Plants <sup>1</sup> <u>        </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Juncus balticus</i></u>	20	Yes	FACW	
2. <u><i>Eleocharis palustris</i></u>	10	Yes	OBL	
3. <u><i>Carex nebrascensis</i></u>	5	No	OBL	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
	35 =Total Cover			
Woody Vine Stratum (Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____				
2. _____				
% Bare Ground in Herb Stratum _____				

Remarks:

**SOIL**

Sampling Point: WL1

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 3/3	85	7.5YR 4/4	15	C	M	Sandy	Faint redox concentrations
5-15	10YR 4/2	75	7.5YR 4/4	25	C	M	Sandy	Distinct redox concentrations

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

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

<b>Restrictive Layer (if observed):</b> Type: <u>Rock/cobble</u> Depth (inches): <u>15</u>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	---

Remarks:  
Young floodplain deposits

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>9</u>	
(includes capillary fringe)	

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

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol: EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
---	--

Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 07-26-2022  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL2  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: SW4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): Flat Slope (%):       
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74799 Long: -105.47339 Datum: NAD83  
 Soil Map Unit Name: Rock outcrop-Cathedral-Resort complex, 30 to 70 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
---	---

Remarks:  
 Small wetland fringe on the bank of Clear Creek

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1.					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2.																					
3.																					
4.																					
				=Total Cover																	
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				<b>Prevalence Index worksheet:</b> <table style="width:100%; font-size: small;"> <tr> <td style="text-align: center;">Total % Cover of:</td> <td style="text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>120</u></td> <td>x 2 = <u>240</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>5</u></td> <td>x 4 = <u>20</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>125</u> (A)</td> <td><u>260</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.08</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>120</u>	x 2 = <u>240</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>5</u>	x 4 = <u>20</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>125</u> (A)	<u>260</u> (B)	Prevalence Index = B/A = <u>2.08</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>0</u>	x 1 = <u>0</u>																				
FACW species <u>120</u>	x 2 = <u>240</u>																				
FAC species <u>0</u>	x 3 = <u>0</u>																				
FACU species <u>5</u>	x 4 = <u>20</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>125</u> (A)	<u>260</u> (B)																				
Prevalence Index = B/A = <u>2.08</u>																					
1. <u>Salix exigua</u>		80	Yes	FACW																	
2.																					
3.																					
4.																					
5.																					
		80		=Total Cover																	
Herb Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Juncus balticus</u>		40	Yes	FACW																	
2. <u>Achillea millefolium</u>		5	No	FACU																	
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					
11.																					
		45		=Total Cover																	
Woody Vine Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																
1.																					
2.																					
				=Total Cover																	
% Bare Ground in Herb Stratum <u>0</u>																					

Remarks:

**SOIL**

Sampling Point: WL2

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-2	10YR 3/3	100					Sandy	
2-12	10YR 4/4	100					Sandy	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)		

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Problematic soils / riprap; Multiple desposition layers

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b>				
Surface Water Present?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	_____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	10	
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	6	

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

Remarks:  
Saturation at 6 inches.

**U.S. Army Corps of Engineers**  
**WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region**  
 See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024  
 Requirement Control Symbol EXEMPT:  
 (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 07-26-2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: WL4  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: SW4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): Flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74457 Long: 105.47308 Datum: NAD83  
 Soil Map Unit Name: Rock outcrop-Cathedral-Resort complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:  
 Fringe and floodplain wetland on the bank of Clear Creek

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60.0%</u> (A/B)
1. <u>Populus angustifolia</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>20</u> =Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Prevalence Index worksheet:</b> Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>80</u> x 2 = <u>160</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species <u>20</u> x 4 = <u>80</u> UPL species <u>20</u> x 5 = <u>100</u> Column Totals: <u>130</u> (A) <u>370</u> (B) Prevalence Index = B/A = <u>2.85</u>
1. <u>Betula occidentalis</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Rosa woodsii</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>40</u> =Total Cover				
Herb Stratum (Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Juncus balticus</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Bromus inermis</u>	<u>20</u>	<u>Yes</u>	<u>UPL</u>	
3. <u>Equisetum arvense</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
4. <u>Pascopyrum smithii</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>70</u> =Total Cover				
Woody Vine Stratum (Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ =Total Cover				
% Bare Ground in Herb Stratum _____				

Remarks:



**SOIL**

Sampling Point: WL4

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/3	100					Sandy	
4-13	10YR 4/3	95	5YR 4/6	5	C	M	Sandy	Prominent redox concentrations

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)		

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

<b>Restrictive Layer (if observed):</b> Type: <u>Cobbles</u> Depth (inches): <u>13</u>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Problematic soil, sandy depositional layer, young soil, hydric granted

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>	
<b>Primary Indicators (minimum of one is required; check all that apply)</b>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>          </u>	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>          </u>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>          </u>	

(includes capillary fringe)

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

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol: EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 07-26-2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: UP004  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: SW4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): flat Slope (%): 3-5  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74463 Long: 105.47311 Datum: NAD83  
 Soil Map Unit Name: Rock outcrop-Cathedral-Resort complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:  
 Upland point for WL4, abrupt transition from floodplain to upland.

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. <u>Populus angustifolia</u>	20	Yes	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)  Total Number of Dominant Species Across All Strata: <u>7</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>42.9%</u> (A/B)																
2. <u>Pseudotsuga menziesii</u>	5	Yes	FACU																	
3. _____																				
4. _____																				
<u>25</u> =Total Cover				<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Total % Cover of:</td> <td style="text-align: right;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>35</u></td> <td>x 2 = <u>70</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>25</u></td> <td>x 4 = <u>100</u></td> </tr> <tr> <td>UPL species <u>20</u></td> <td>x 5 = <u>100</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>300</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.33</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>35</u>	x 2 = <u>70</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>25</u>	x 4 = <u>100</u>	UPL species <u>20</u>	x 5 = <u>100</u>	Column Totals: <u>90</u> (A)	<u>300</u> (B)	Prevalence Index = B/A = <u>3.33</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>35</u>	x 2 = <u>70</u>																			
FAC species <u>10</u>	x 3 = <u>30</u>																			
FACU species <u>25</u>	x 4 = <u>100</u>																			
UPL species <u>20</u>	x 5 = <u>100</u>																			
Column Totals: <u>90</u> (A)	<u>300</u> (B)																			
Prevalence Index = B/A = <u>3.33</u>																				
<b>Sapling/Shrub Stratum (Plot size: <u>15</u>)</b>																				
1. <u>Betula occidentalis</u>	15	Yes	FACW																	
2. _____																				
3. _____																				
4. _____																				
5. _____																				
<u>15</u> =Total Cover																				
<b>Herb Stratum (Plot size: <u>5</u>)</b>																				
1. <u>Bromus inermis</u>	20	Yes	UPL	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Pascopyrum smithii</u>	10	Yes	FACU																	
3. <u>Cirsium arvense</u>	10	Yes	FAC																	
4. <u>Achillea millefolium</u>	10	Yes	FACU																	
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
<u>50</u> =Total Cover																				
<b>Woody Vine Stratum (Plot size: <u>5</u>)</b>																				
1. _____																				
2. _____																				
_____ =Total Cover																				
% Bare Ground in Herb Stratum _____																				

Remarks:

**SOIL**

Sampling Point: UP004

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR 4/4	100					Sandy	
3-14	10YR 3/4	100					Sandy	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>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 X

Remarks:  
 Soil is dry

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present?	Yes _____	No <u>X</u>	Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Water Table Present?	Yes _____	No <u>X</u>	Depth (inches): _____	
Saturation Present?	Yes _____	No <u>X</u>	Depth (inches): _____	
(includes capillary fringe)				

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

Remarks:  
 No signs of hydrology

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/26/2022  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL5  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: NE4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74690 Long: -105.46507 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Fringe wetland along Clear Creek

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1.					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2.																					
3.																					
4.																					
=Total Cover					<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>10</u></td> <td>x 1 = <u>10</u></td> </tr> <tr> <td>FACW species <u>100</u></td> <td>x 2 = <u>200</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>115</u> (A)</td> <td><u>235</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.04</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>10</u>	x 1 = <u>10</u>	FACW species <u>100</u>	x 2 = <u>200</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>115</u> (A)	<u>235</u> (B)	Prevalence Index = B/A = <u>2.04</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>10</u>	x 1 = <u>10</u>																				
FACW species <u>100</u>	x 2 = <u>200</u>																				
FAC species <u>0</u>	x 3 = <u>0</u>																				
FACU species <u>0</u>	x 4 = <u>0</u>																				
UPL species <u>5</u>	x 5 = <u>25</u>																				
Column Totals: <u>115</u> (A)	<u>235</u> (B)																				
Prevalence Index = B/A = <u>2.04</u>																					
Sapling/Shrub Stratum	(Plot size: <u>15</u> )																				
1. <u>Salix exigua</u>		<u>80</u>	<u>Yes</u>	<u>FACW</u>																	
2.																					
3.																					
4.																					
5.																					
=Total Cover																					
Herb Stratum	(Plot size: <u>5</u> )																				
1. <u>Eleocharis palustris</u>		<u>10</u>	<u>Yes</u>	<u>OBL</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Juncus balticus</u>		<u>20</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u>Melilotus alba</u>		<u>5</u>	<u>No</u>	<u>UPL</u>																	
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					
11.																					
=Total Cover																					
Woody Vine Stratum	(Plot size: <u>    </u> )																				
1.																					
2.																					
=Total Cover																					
% Bare Ground in Herb Stratum <u>    </u>					<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																

**SOIL**

Sampling Point: WL5

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 3/4	95	7.5YR 4/6	5			Sandy	
5-14	10YR 4/4	75	5YR 4/6	25			Sandy	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

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

<b>Restrictive Layer (if observed):</b> Type: <u>Cobble</u> Depth (inches): <u>14</u>	Hydric Soil Present?      Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Problematic soil, young deposit, faint but present redox

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?      Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present?        Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/26/2022  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL6  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: NE4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74766 Long: 105.46459 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil , or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Fringe wetland along Clear Creek	

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																																																
1. _____					Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																																																
2. _____																																																					
3. _____																																																					
4. _____																																																					
=Total Cover					<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Total % Cover of:</td> <td style="width: 10%;"></td> <td style="width: 10%;">Multiply by:</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td>OBL species</td> <td><u>45</u></td> <td>x 1 =</td> <td><u>45</u></td> <td></td> <td></td> </tr> <tr> <td>FACW species</td> <td><u>30</u></td> <td>x 2 =</td> <td><u>60</u></td> <td></td> <td></td> </tr> <tr> <td>FAC species</td> <td><u>15</u></td> <td>x 3 =</td> <td><u>45</u></td> <td></td> <td></td> </tr> <tr> <td>FACU species</td> <td><u>0</u></td> <td>x 4 =</td> <td><u>0</u></td> <td></td> <td></td> </tr> <tr> <td>UPL species</td> <td><u>0</u></td> <td>x 5 =</td> <td><u>0</u></td> <td></td> <td></td> </tr> <tr> <td>Column Totals:</td> <td><u>90</u> (A)</td> <td></td> <td></td> <td><u>150</u> (B)</td> <td></td> </tr> <tr> <td colspan="6">Prevalence Index = B/A = <u>1.67</u></td> </tr> </table>	Total % Cover of:		Multiply by:				OBL species	<u>45</u>	x 1 =	<u>45</u>			FACW species	<u>30</u>	x 2 =	<u>60</u>			FAC species	<u>15</u>	x 3 =	<u>45</u>			FACU species	<u>0</u>	x 4 =	<u>0</u>			UPL species	<u>0</u>	x 5 =	<u>0</u>			Column Totals:	<u>90</u> (A)			<u>150</u> (B)		Prevalence Index = B/A = <u>1.67</u>					
Total % Cover of:		Multiply by:																																																			
OBL species	<u>45</u>	x 1 =	<u>45</u>																																																		
FACW species	<u>30</u>	x 2 =	<u>60</u>																																																		
FAC species	<u>15</u>	x 3 =	<u>45</u>																																																		
FACU species	<u>0</u>	x 4 =	<u>0</u>																																																		
UPL species	<u>0</u>	x 5 =	<u>0</u>																																																		
Column Totals:	<u>90</u> (A)			<u>150</u> (B)																																																	
Prevalence Index = B/A = <u>1.67</u>																																																					
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15</u> )					<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																																																
1. <u>Salix exigua</u>		<u>20</u>	<u>Yes</u>	<u>FACW</u>																																																	
2. _____																																																					
3. _____																																																					
4. _____																																																					
=Total Cover																																																					
<b>Herb Stratum</b> (Plot size: <u>5</u> )					<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																																
1. <u>Eleocharis palustris</u>		<u>15</u>	<u>Yes</u>	<u>OBL</u>																																																	
2. <u>Carex nebrascensis</u>		<u>30</u>	<u>Yes</u>	<u>OBL</u>																																																	
3. <u>Juncus dudleyi</u>		<u>15</u>	<u>Yes</u>	<u>FAC</u>																																																	
4. <u>Carex athrostachya</u>		<u>10</u>	<u>No</u>	<u>FACW</u>																																																	
5. _____																																																					
6. _____																																																					
7. _____																																																					
8. _____																																																					
9. _____																																																					
10. _____																																																					
=Total Cover																																																					
<b>Woody Vine Stratum</b> (Plot size: <u>5</u> )																																																					
1. _____																																																					
2. _____																																																					
=Total Cover																																																					
% Bare Ground in Herb Stratum <u>0</u>																																																					
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____																																																					
Remarks:																																																					

**SOIL**

Sampling Point: WL6

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-7	10YR 3/3	100	7.5YR 5/6	20	C	M	Sandy	Prominent redox concentrations

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Depleted Dark Surface (F7)	
	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if observed):</b> Type: <u>Cobbles/Gravel</u> Depth (inches): <u>7</u>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Problematic soils, young deposits but clear redox

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>  </u>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>  </u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>7</u> (includes capillary fringe)	

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

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/27/2022  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL7  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: NE4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74831 Long: 105.46299 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Large wetland on floodplain on inside bend of Clear Creek	

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1.					
2.					
3.					
4.					
=Total Cover					
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				
1.	<u>Salix exigua</u>	30	Yes	FACW	
2.	<u>Betula occidentalis</u>	20	Yes	FACW	
3.	<u>Salix bebbiana</u>	10	No	FACW	
4.					
5.					
60 =Total Cover					
Herb Stratum	(Plot size: <u>5</u> )				
1.	<u>Eleocharis palustris</u>	20	Yes	OBL	
2.	<u>Juncus balticus</u>	20	Yes	FACW	
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
40 =Total Cover					
Woody Vine Stratum	(Plot size: <u>5</u> )				
1.					
2.					
=Total Cover					
% Bare Ground in Herb Stratum <u>10</u>					

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

	Total % Cover of:	Multiply by:
OBL species	<u>20</u>	<u>x 1 = 20</u>
FACW species	<u>80</u>	<u>x 2 = 160</u>
FAC species	<u>0</u>	<u>x 3 = 0</u>
FACU species	<u>0</u>	<u>x 4 = 0</u>
UPL species	<u>0</u>	<u>x 5 = 0</u>
Column Totals:	<u>100</u> (A)	<u>180</u> (B)
Prevalence Index = B/A = <u>1.80</u>		

**Hydrophytic Vegetation Indicators:**

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0<sup>1</sup>

4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

5 - Wetland Non-Vascular Plants<sup>1</sup>

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes  No

Remarks:



**SOIL**

Sampling Point: WL7

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/2	100	7.5YR 5/8	10	C	M	Sandy	Prominent redox concentrations
4-15	10YR 3/3	100	7.5YR 5/8	20	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	Hydric Soil Present?      Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Young deposits, extremely cobbly, but meets S5

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?      Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>15</u> Saturation Present?        Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10</u> (includes capillary fringe)	Wetland Hydrology Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/27/2022  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL8  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: NE4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%):       
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.748220 Long: 105.46297 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Small depression of Carex in larger PSS wetland (WL7)	

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																																									
1.					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																																								
2.																																													
3.																																													
4.																																													
=Total Cover					<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Total % Cover of:</td> <td style="width: 10%;"></td> <td style="width: 10%;">Multiply by:</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td>OBL species</td> <td><u>70</u></td> <td>x 1 =</td> <td><u>70</u></td> <td></td> </tr> <tr> <td>FACW species</td> <td><u>10</u></td> <td>x 2 =</td> <td><u>20</u></td> <td></td> </tr> <tr> <td>FAC species</td> <td><u>0</u></td> <td>x 3 =</td> <td><u>0</u></td> <td></td> </tr> <tr> <td>FACU species</td> <td><u>0</u></td> <td>x 4 =</td> <td><u>0</u></td> <td></td> </tr> <tr> <td>UPL species</td> <td><u>0</u></td> <td>x 5 =</td> <td><u>0</u></td> <td></td> </tr> <tr> <td>Column Totals:</td> <td><u>80</u> (A)</td> <td></td> <td><u>90</u> (B)</td> <td></td> </tr> <tr> <td colspan="5" style="text-align: right;">Prevalence Index = B/A = <u>1.13</u></td> </tr> </table>	Total % Cover of:		Multiply by:			OBL species	<u>70</u>	x 1 =	<u>70</u>		FACW species	<u>10</u>	x 2 =	<u>20</u>		FAC species	<u>0</u>	x 3 =	<u>0</u>		FACU species	<u>0</u>	x 4 =	<u>0</u>		UPL species	<u>0</u>	x 5 =	<u>0</u>		Column Totals:	<u>80</u> (A)		<u>90</u> (B)		Prevalence Index = B/A = <u>1.13</u>				
Total % Cover of:		Multiply by:																																											
OBL species	<u>70</u>	x 1 =	<u>70</u>																																										
FACW species	<u>10</u>	x 2 =	<u>20</u>																																										
FAC species	<u>0</u>	x 3 =	<u>0</u>																																										
FACU species	<u>0</u>	x 4 =	<u>0</u>																																										
UPL species	<u>0</u>	x 5 =	<u>0</u>																																										
Column Totals:	<u>80</u> (A)		<u>90</u> (B)																																										
Prevalence Index = B/A = <u>1.13</u>																																													
Sapling/Shrub Stratum		(Plot size: <u>15</u> )			<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																								
1.																																													
2.																																													
3.																																													
4.																																													
=Total Cover																																													
Herb Stratum		(Plot size: <u>5</u> )			<b>Hydrophytic Vegetation</b> Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																								
1.	<u>Carex aquatilis</u>	<u>70</u>	<u>Yes</u>	<u>OBL</u>																																									
2.	<u>Juncus balticus</u>	<u>10</u>	<u>No</u>	<u>FACW</u>																																									
3.																																													
4.																																													
5.																																													
6.																																													
7.																																													
8.																																													
9.																																													
10.																																													
<u>80</u> =Total Cover																																													
Woody Vine Stratum		(Plot size: <u>    </u> )																																											
1.																																													
2.																																													
=Total Cover																																													
% Bare Ground in Herb Stratum <u>10</u>																																													
Remarks: Some open water																																													

**SOIL**

Sampling Point: WL8

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-2	7.5YR 2.5/2	100					Mucky Loam/Clay	High in OM
2-8	10YR 3/2	100					Loamy/Clayey	A4 Water Table

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input checked="" type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Problematic soil, likely saturated year-round with depositional events

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>3</u> (includes capillary fringe)	

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

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/27/2022  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL9  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: NE4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%):       
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74819 Long: 105.46233 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
 Fringe wetland along Clear Creek, inside bend

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1.					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
2.					
3.					
4.					
=Total Cover					<b>Prevalence Index worksheet:</b> Total % Cover of:      Multiply by: OBL species <u>20</u> x 1 = <u>20</u> FACW species <u>90</u> x 2 = <u>180</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>110</u> (A) <u>200</u> (B) Prevalence Index = B/A = <u>1.82</u>
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				
1.	<u>Salix exigua</u>	<u>70</u>	<u>Yes</u>	<u>FACW</u>	
2.					
3.					
4.					
5.					
=Total Cover					
Herb Stratum	(Plot size: <u>5</u> )				
1.	<u>Eleocharis palustris</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>	
2.	<u>Juncus balticus</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
=Total Cover					
Woody Vine Stratum	(Plot size: <u>5</u> )				
1.					
2.					
=Total Cover					
% Bare Ground in Herb Stratum <u>50</u>					<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					

Remarks:

**SOIL**

Sampling Point: WL9

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-4	2.5Y 3/2	100					Sandy	
4-7	10YR 4/2	100					Sandy	
7-16	10YR 4/2	100	10YR 5/8	20	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	Hydric Soil Present?      Yes <input checked="" type="checkbox"/> No _____
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Remarks:  
Young deposits but meets S5

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

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

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

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/27/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: WL10  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: NE4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74807 Long: 105.46152 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Larger floodplain wetland on outside bend of Clear Creek	

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1.					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2.																					
3.																					
4.																					
				=Total Cover																	
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				<b>Prevalence Index worksheet:</b> <table style="width:100%; font-size: small;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>160</u></td> <td>x 2 = <u>320</u></td> </tr> <tr> <td>FAC species <u>25</u></td> <td>x 3 = <u>75</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>185</u> (A)</td> <td><u>395</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.14</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>160</u>	x 2 = <u>320</u>	FAC species <u>25</u>	x 3 = <u>75</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>185</u> (A)	<u>395</u> (B)	Prevalence Index = B/A = <u>2.14</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>0</u>	x 1 = <u>0</u>																				
FACW species <u>160</u>	x 2 = <u>320</u>																				
FAC species <u>25</u>	x 3 = <u>75</u>																				
FACU species <u>0</u>	x 4 = <u>0</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>185</u> (A)	<u>395</u> (B)																				
Prevalence Index = B/A = <u>2.14</u>																					
1. <i>Salix exigua</i>		50	Yes	FACW																	
2. <i>Salix bebbiana</i>		20	Yes	FACW																	
3. <i>Betula occidentalis</i>		20	Yes	FACW																	
4.																					
		80		=Total Cover																	
Herb Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <i>Juncus balticus</i>		70	Yes	FACW																	
2. <i>Festuca rubra</i>		20	Yes	FAC																	
3. <i>Cirsium arvense</i>		5	No	FAC																	
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					
		95		=Total Cover																	
Woody Vine Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																
1.																					
2.																					
				=Total Cover																	
% Bare Ground in Herb Stratum _____																					

Remarks:

**SOIL**

Sampling Point: WL10

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 4/3	100	7.5YR 4/4	10	C	M	Sandy	Faint redox concentrations
5-16	10YR 3/3	100	7.5YR 4/6	25	C	M	Sandy	Prominent redox concentrations

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)		

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Problematic soils. Young deposits. does not meet chroma for S5, but redox are clear

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>	
<b>Primary Indicators (minimum of one is required; check all that apply)</b>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

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

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

Remarks:

**U.S. Army Corps of Engineers**  
**WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region**  
 See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024  
 Requirement Control Symbol EXEMPT:  
 (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/26/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: UP10  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: NE4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): flat Slope (%): 10  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74820 Long: 105.46151 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

Remarks:  
 Steep side slope above wetland

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Pinus ponderosa</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Juniperus monosperma</u>	<u>20</u>	<u>Yes</u>	<u>UPL</u>	
3. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>35</u> x 4 = <u>140</u> UPL species <u>50</u> x 5 = <u>250</u> Column Totals: <u>85</u> (A) <u>390</u> (B) Prevalence Index = B/A = <u>4.59</u>
4. _____	_____	_____	_____	
<u>40</u> =Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15</u> )				
1. <u>Symphoricarpos mollis</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>5</u> - Wetland Non-Vascular Plants <sup>1</sup> <u>_____</u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Artemisia frigida</u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>25</u> =Total Cover				
Herb Stratum (Plot size: <u>5</u> )				
1. <u>Bromus inermis</u>	<u>20</u>	<u>Yes</u>	<u>UPL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>20</u> =Total Cover				
Woody Vine Stratum (Plot size: <u>5</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ =Total Cover				
% Bare Ground In Herb Stratum _____				
Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				

Remarks:



**SOIL**

Sampling Point: UP10

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-10	2.5Y 3/3	100					Loamy/Clayey	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)		

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

**Restrictive Layer (if observed):**  
 Type: Cobbles/Rocks  
 Depth (inches): 10

**Hydric Soil Present?** Yes  No

Remarks:  
 Shallow soil, dry, no signs of wetting

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>	
<b>Primary Indicators (minimum of one is required; check all that apply)</b>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

**Field Observations:**

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

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

Remarks:  
 None observed.

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/26/2022  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL11  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: NE4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74797 Long: 105.46181 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
 Fringe wetland, 2-3 ft. wide along inside bend of Clear Creek

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1.					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2.																					
3.																					
4.																					
				=Total Cover																	
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>40</u></td> <td>x 1 = <u>40</u></td> </tr> <tr> <td>FACW species <u>60</u></td> <td>x 2 = <u>120</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>160</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>1.60</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>40</u>	x 1 = <u>40</u>	FACW species <u>60</u>	x 2 = <u>120</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>160</u> (B)	Prevalence Index = B/A = <u>1.60</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>40</u>	x 1 = <u>40</u>																				
FACW species <u>60</u>	x 2 = <u>120</u>																				
FAC species <u>0</u>	x 3 = <u>0</u>																				
FACU species <u>0</u>	x 4 = <u>0</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>100</u> (A)	<u>160</u> (B)																				
Prevalence Index = B/A = <u>1.60</u>																					
1. <u>Betula occidentalis</u>		<u>40</u>	<u>Yes</u>	<u>FACW</u>																	
2.																					
3.																					
4.																					
5.																					
		<u>40</u>		=Total Cover																	
Herb Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Carex aquatilis</u>		<u>20</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u>Juncus balticus</u>		<u>20</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u>Eleocharis palustris</u>		<u>20</u>	<u>Yes</u>	<u>OBL</u>																	
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					
11.																					
		<u>60</u>		=Total Cover																	
Woody Vine Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																
1.																					
2.																					
				=Total Cover																	
% Bare Ground in Herb Stratum _____																					

Remarks:

**SOIL**

Sampling Point: WL11

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 2/2	100					Sandy	
4-7	7.5YR 3/3	100	5YR 4/6	60	C	M	Sandy	Prominent redox concentrations
7-14	10YR 4/2	100	5YR 4/6	30	C	M	Sandy	Prominent redox concentrations

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Depletions 15% 10YR 6/3 (4-7 Layer)

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?      Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present?      Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present?      Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u>	
(includes capillary fringe)	

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

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol: EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/26/2022  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL12  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: NE4 S32, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74742 Long: 105.46106 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Fringe wetland along Clear Creek

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																																	
1. _____					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																																
2. _____																																					
3. _____																																					
4. _____																																					
_____ =Total Cover																																					
Sapling/Shrub Stratum	(Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status																																	
1. <u>Salix exigua</u>		<u>70</u>	<u>Yes</u>	<u>FACW</u>	<b>Prevalence Index worksheet:</b> <table style="width:100%; font-size: small;"> <tr> <td colspan="2">Total % Cover of:</td> <td colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td><u>30</u></td> <td>x 1 =</td> <td><u>30</u></td> </tr> <tr> <td>FACW species</td> <td><u>90</u></td> <td>x 2 =</td> <td><u>180</u></td> </tr> <tr> <td>FAC species</td> <td><u>10</u></td> <td>x 3 =</td> <td><u>30</u></td> </tr> <tr> <td>FACU species</td> <td><u>0</u></td> <td>x 4 =</td> <td><u>0</u></td> </tr> <tr> <td>UPL species</td> <td><u>0</u></td> <td>x 5 =</td> <td><u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>130</u> (A)</td> <td></td> <td><u>240</u> (B)</td> </tr> <tr> <td colspan="4">Prevalence Index = B/A = <u>1.85</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	<u>30</u>	x 1 =	<u>30</u>	FACW species	<u>90</u>	x 2 =	<u>180</u>	FAC species	<u>10</u>	x 3 =	<u>30</u>	FACU species	<u>0</u>	x 4 =	<u>0</u>	UPL species	<u>0</u>	x 5 =	<u>0</u>	Column Totals:	<u>130</u> (A)		<u>240</u> (B)	Prevalence Index = B/A = <u>1.85</u>			
Total % Cover of:		Multiply by:																																			
OBL species	<u>30</u>	x 1 =	<u>30</u>																																		
FACW species	<u>90</u>	x 2 =	<u>180</u>																																		
FAC species	<u>10</u>	x 3 =	<u>30</u>																																		
FACU species	<u>0</u>	x 4 =	<u>0</u>																																		
UPL species	<u>0</u>	x 5 =	<u>0</u>																																		
Column Totals:	<u>130</u> (A)		<u>240</u> (B)																																		
Prevalence Index = B/A = <u>1.85</u>																																					
2. _____																																					
3. _____																																					
4. _____																																					
5. _____																																					
<u>70</u> =Total Cover																																					
Herb Stratum	(Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status																																	
1. <u>Juncus balficus</u>		<u>20</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
2. <u>Carex aquatilis</u>		<u>20</u>	<u>Yes</u>	<u>OBL</u>																																	
3. <u>Juncus dudleyi</u>		<u>10</u>	<u>No</u>	<u>FAC</u>																																	
4. <u>Eleocharis palustris</u>		<u>10</u>	<u>No</u>	<u>OBL</u>																																	
5. _____																																					
6. _____																																					
7. _____																																					
8. _____																																					
9. _____																																					
10. _____																																					
11. _____																																					
<u>60</u> =Total Cover																																					
Woody Vine Stratum	(Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status																																	
1. _____					<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																
2. _____																																					
_____ =Total Cover																																					
% Bare Ground in Herb Stratum _____																																					

Remarks:

**SOIL**

Sampling Point: WL12

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-8	10YR 4/4	100	7.5YR 4/6	25	C		Sandy	Distinct redox concentrations

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

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

<b>Restrictive Layer (if observed):</b> Type: <u>Cobbles and river rock</u> Depth (inches): <u>8</u>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Problematic soils. Shallow and young deposits, but redox are clear, chroma does not meet S5

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>  </u>		
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u>		
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>4</u>		
(includes capillary fringe)		

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

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/27/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: WL14  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: NW4 S33, T3S, R72W  
 Landform (hillside, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74677 Long: -105.46036 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil , or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
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Remarks:  
 Wetland between two bridges along Clear Creek. Adjacent to WL15

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____																					
3. _____																					
4. _____																					
=Total Cover																					
Sapling/Shrub Stratum	(Plot size: <u>15</u> )																				
1. <i>Salix exigua</i>		50	Yes	FACW	<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>10</u></td> <td>x 1 = <u>10</u></td> </tr> <tr> <td>FACW species <u>90</u></td> <td>x 2 = <u>180</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>190</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.90</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>10</u>	x 1 = <u>10</u>	FACW species <u>90</u>	x 2 = <u>180</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>190</u> (B)	Prevalence Index = B/A = <u>1.90</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>10</u>	x 1 = <u>10</u>																				
FACW species <u>90</u>	x 2 = <u>180</u>																				
FAC species <u>0</u>	x 3 = <u>0</u>																				
FACU species <u>0</u>	x 4 = <u>0</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>100</u> (A)	<u>190</u> (B)																				
Prevalence Index = B/A = <u>1.90</u>																					
2. <i>Betula occidentalis</i>		10	No	FACW																	
3. _____																					
4. _____																					
60 =Total Cover																					
Herb Stratum	(Plot size: <u>5</u> )																				
1. <i>Juncus balticus</i>		30	Yes	FACW	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <i>Carex aquatilis</i>		5	No	OBL																	
3. <i>Eleocharis palustris</i>		5	No	OBL																	
4. _____																					
5. _____																					
6. _____																					
7. _____																					
8. _____																					
9. _____																					
10. _____																					
40 =Total Cover																					
Woody Vine Stratum	(Plot size: <u>5</u> )																				
1. _____					<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____																
2. _____																					
=Total Cover																					
% Bare Ground in Herb Stratum <u>10</u>																					

Remarks:

**SOIL**

Sampling Point: WL14

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 3/6	100					Sandy	Medium sand
5-7	10YR 4/3	100	7.5YR 4/6	10	C	M	Sandy	
7-14	10YR 3/3	100	7.5YR 4/6	5	C	M	Sandy	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)		

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Problematic soil. Young deposits do not meet chroma for S5 but redox are clear

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>	
<b>Primary Indicators (minimum of one is required; check all that apply)</b>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

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

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

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol: EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/27/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: WL15  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: NW4 S33, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): concave Slope (%): 0  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74675 Long: 105.46044 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
 Small PEM depression adjacent to PSS WL14

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																																									
1.					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																																								
2.																																													
3.																																													
4.																																													
=Total Cover					<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Total % Cover of:</td> <td style="width: 10%;"></td> <td style="width: 10%;">Multiply by:</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;">90</td> <td>x 1 =</td> <td style="text-align: center;">90</td> <td></td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;">10</td> <td>x 2 =</td> <td style="text-align: center;">20</td> <td></td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;">0</td> <td>x 3 =</td> <td style="text-align: center;">0</td> <td></td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;">0</td> <td>x 4 =</td> <td style="text-align: center;">0</td> <td></td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;">0</td> <td>x 5 =</td> <td style="text-align: center;">0</td> <td></td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;">100</td> <td>(A)</td> <td style="text-align: center;">110</td> <td>(B)</td> </tr> <tr> <td colspan="5" style="text-align: center;">Prevalence Index = B/A = <u>1.10</u></td> </tr> </table>	Total % Cover of:		Multiply by:			OBL species	90	x 1 =	90		FACW species	10	x 2 =	20		FAC species	0	x 3 =	0		FACU species	0	x 4 =	0		UPL species	0	x 5 =	0		Column Totals:	100	(A)	110	(B)	Prevalence Index = B/A = <u>1.10</u>				
Total % Cover of:		Multiply by:																																											
OBL species	90	x 1 =	90																																										
FACW species	10	x 2 =	20																																										
FAC species	0	x 3 =	0																																										
FACU species	0	x 4 =	0																																										
UPL species	0	x 5 =	0																																										
Column Totals:	100	(A)	110	(B)																																									
Prevalence Index = B/A = <u>1.10</u>																																													
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15</u> )																																													
1.																																													
2.																																													
3.																																													
4.																																													
5.																																													
=Total Cover																																													
<b>Herb Stratum</b> (Plot size: <u>5</u> )																																													
1.	<u><i>Schoenoplectus tabernaemontani</i></u>	90	Yes	OBL																																									
2.	<u><i>Juncus balticus</i></u>	10	No	FACW																																									
3.																																													
4.																																													
5.																																													
6.																																													
7.																																													
8.																																													
9.																																													
10.																																													
11.																																													
100 =Total Cover																																													
<b>Woody Vine Stratum</b> (Plot size: <u>5</u> )																																													
1.																																													
2.																																													
=Total Cover																																													
% Bare Ground in Herb Stratum <u>5</u>																																													
<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																													
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																													

Remarks:



**SOIL**

Sampling Point: WL015

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 2/2	100					Loamy/Clayey	
5-14	10YR 3/2	100					Loamy/Clayey	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>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:  
 Color likely driven by organic matter content and may not be F3, but otherwise problematic as it's likely saturated year-round

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (inches): <u>3</u>	
(includes capillary fringe)				

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

Remarks:  
 \_\_\_\_\_

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol: EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/27/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: WL16  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: SW4 S33, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74482 Long: 105.45785 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
 Large floodplain wetland along Clear Creek

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____																					
3. _____																					
4. _____																					
=Total Cover																					
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				<b>Prevalence Index worksheet:</b> <table style="width:100%; font-size: small;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>5</u></td> <td>x 1 = <u>5</u></td> </tr> <tr> <td>FACW species <u>120</u></td> <td>x 2 = <u>240</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>145</u> (A)</td> <td><u>315</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.17</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>5</u>	x 1 = <u>5</u>	FACW species <u>120</u>	x 2 = <u>240</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>145</u> (A)	<u>315</u> (B)	Prevalence Index = B/A = <u>2.17</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>5</u>	x 1 = <u>5</u>																				
FACW species <u>120</u>	x 2 = <u>240</u>																				
FAC species <u>10</u>	x 3 = <u>30</u>																				
FACU species <u>10</u>	x 4 = <u>40</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>145</u> (A)	<u>315</u> (B)																				
Prevalence Index = B/A = <u>2.17</u>																					
1. <u>Salix exigua</u>		<u>40</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Betula occidentalis</u>		<u>20</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u>Rosa woodsii</u>		<u>10</u>	<u>No</u>	<u>FACU</u>																	
4. _____																					
5. _____																					
=Total Cover																					
Herb Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Juncus balticus</u>		<u>60</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Cirsium arvense</u>		<u>10</u>	<u>No</u>	<u>FAC</u>																	
3. <u>Carex aquatilis</u>		<u>5</u>	<u>No</u>	<u>OBL</u>																	
4. _____																					
5. _____																					
6. _____																					
7. _____																					
8. _____																					
9. _____																					
10. _____																					
11. _____																					
=Total Cover																					
Woody Vine Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																
1. _____																					
2. _____																					
=Total Cover																					
% Bare Ground in Herb Stratum <u>10</u>																					

Remarks:

**SOIL**

Sampling Point: WL16

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 3/3	95	7.5YR 4/6	5	C	M	Loamy/Clayey	Prominent redox concentrations
5-8	10YR 3/2	70	7.5YR 4/6	25	C	M	Loamy/Clayey	Prominent redox concentrations
			10YR 4/2	5	D	M		
8-16	10YR 3/3	70	7.5YR 4/6	30	C	M		Prominent redox concentrations

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>12</u>	
(includes capillary fringe)	

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

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/27/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: WL17  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: SW4 S33, T3S, R72W  
 Landform (hillside, terrace, etc.): island Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74483 Long: 105.45814 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
 Small island in Clear Creek with sufficient soil to support a wetland

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1.					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2.																					
3.																					
4.																					
=Total Cover					<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>50</u></td> <td>x 2 = <u>100</u></td> </tr> <tr> <td>FAC species <u>5</u></td> <td>x 3 = <u>15</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>55</u> (A)</td> <td><u>115</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.09</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>50</u>	x 2 = <u>100</u>	FAC species <u>5</u>	x 3 = <u>15</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>55</u> (A)	<u>115</u> (B)	Prevalence Index = B/A = <u>2.09</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>0</u>	x 1 = <u>0</u>																				
FACW species <u>50</u>	x 2 = <u>100</u>																				
FAC species <u>5</u>	x 3 = <u>15</u>																				
FACU species <u>0</u>	x 4 = <u>0</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>55</u> (A)	<u>115</u> (B)																				
Prevalence Index = B/A = <u>2.09</u>																					
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1.	<u>Salix exigua</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>																	
2.	<u>Salix bebbiana</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>																	
3.																					
4.																					
=Total Cover																					
Herb Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation</b> Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																
1.	<u>Equisetum arvense</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>																	
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					
=Total Cover																					
Woody Vine Stratum	(Plot size: <u>5</u> )																				
1.																					
2.																					
=Total Cover																					
% Bare Ground in Herb Stratum <u>5</u>																					

Remarks:

**SOIL**

Sampling Point: WL17

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 3/3	95	7.5YR 5/8	5	C	M	Sandy	Prominent redox concentrations
5-14	10YR 3/2	80	7.5YR 5/8	20	C	M	Sandy	Prominent redox concentrations

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b>	
Surface Water Present?      Yes _____      No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No _____
Water Table Present?      Yes _____      No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present?      Yes <input checked="" type="checkbox"/> No _____      Depth (inches): <u>8</u> (includes capillary fringe)	

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

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol: EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/27/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: WL19  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: SW4 S33, T3S, R72W  
 Landform (hillside, terrace, etc.): island Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74291 Long: 105.45399 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Island wetland along an outside bend in Clear Creek	

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																									
1. _____					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																								
2. _____																													
3. _____																													
4. _____																													
=Total Cover																													
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Total % Cover of:</td> <td style="text-align: center;">Multiply by:</td> <td></td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 =</td> <td><u>0</u></td> </tr> <tr> <td>FACW species <u>160</u></td> <td>x 2 =</td> <td><u>320</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 =</td> <td><u>30</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 =</td> <td><u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 =</td> <td><u>0</u></td> </tr> <tr> <td>Column Totals: <u>170</u> (A)</td> <td></td> <td><u>350</u> (B)</td> </tr> <tr> <td colspan="3" style="text-align: center;">Prevalence Index = B/A = <u>2.06</u></td> </tr> </table>	Total % Cover of:	Multiply by:		OBL species <u>0</u>	x 1 =	<u>0</u>	FACW species <u>160</u>	x 2 =	<u>320</u>	FAC species <u>10</u>	x 3 =	<u>30</u>	FACU species <u>0</u>	x 4 =	<u>0</u>	UPL species <u>0</u>	x 5 =	<u>0</u>	Column Totals: <u>170</u> (A)		<u>350</u> (B)	Prevalence Index = B/A = <u>2.06</u>		
Total % Cover of:	Multiply by:																												
OBL species <u>0</u>	x 1 =	<u>0</u>																											
FACW species <u>160</u>	x 2 =	<u>320</u>																											
FAC species <u>10</u>	x 3 =	<u>30</u>																											
FACU species <u>0</u>	x 4 =	<u>0</u>																											
UPL species <u>0</u>	x 5 =	<u>0</u>																											
Column Totals: <u>170</u> (A)		<u>350</u> (B)																											
Prevalence Index = B/A = <u>2.06</u>																													
1. <u>Salix exigua</u>		<u>70</u>	<u>Yes</u>	<u>FACW</u>																									
2. <u>Betula occidentalis</u>		<u>10</u>	<u>No</u>	<u>FACW</u>																									
3. _____																													
4. _____																													
=Total Cover																													
Herb Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																								
1. <u>Equisetum arvense</u>		<u>10</u>	<u>No</u>	<u>FAC</u>																									
2. <u>Calamagrostis canadensis</u>		<u>70</u>	<u>Yes</u>	<u>FACW</u>																									
3. <u>Juncus balticus</u>		<u>10</u>	<u>No</u>	<u>FACW</u>																									
4. _____																													
5. _____																													
6. _____																													
7. _____																													
8. _____																													
9. _____																													
10. _____																													
=Total Cover																													
Woody Vine Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																								
1. _____																													
2. _____																													
=Total Cover																													
% Bare Ground in Herb Stratum <u>5</u>																													
Remarks:																													

**SOIL**

Sampling Point: WL19

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-2	10YR 3/3	100					Sandy	
2-12	10YR 3/3	80	7.5YR 5/8	20	C	M	Sandy	Prominent redox concentrations

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)		

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

<b>Restrictive Layer (if observed):</b> Type: <u>Cobble</u> Depth (inches): <u>12</u>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Problematic soils - young deposits of sand, chroma does not meet S5, but redox are clear

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>	
<b>Primary Indicators (minimum of one is required; check all that apply)</b>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

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

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

Remarks:  
Likely higher water table at higher flows

**U.S. Army Corps of Engineers**  
**WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region**  
 See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024  
 Requirement Control Symbol EXEMPT:  
 (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/27/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: UP19  
 Investigator(s): Fillipi and Kizlinski Section, Township, Range: SW4 S33, T3S, R72W  
 Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): flat Slope (%): 2-3  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.742866 Long: 105.453997 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

Remarks:  
 Upland between river and path, not a natural setting, but upland veg established

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80.0%</u> (A/B)																
1.																					
2.																					
3.																					
4.																					
=Total Cover																					
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				<b>Prevalence Index worksheet:</b> <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20</u></td> </tr> <tr> <td>FAC species <u>30</u></td> <td>x 3 = <u>90</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>30</u></td> <td>x 5 = <u>150</u></td> </tr> <tr> <td>Column Totals: <u>70</u> (A)</td> <td><u>260</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.71</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>10</u>	x 2 = <u>20</u>	FAC species <u>30</u>	x 3 = <u>90</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>30</u>	x 5 = <u>150</u>	Column Totals: <u>70</u> (A)	<u>260</u> (B)	Prevalence Index = B/A = <u>3.71</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>0</u>	x 1 = <u>0</u>																				
FACW species <u>10</u>	x 2 = <u>20</u>																				
FAC species <u>30</u>	x 3 = <u>90</u>																				
FACU species <u>0</u>	x 4 = <u>0</u>																				
UPL species <u>30</u>	x 5 = <u>150</u>																				
Column Totals: <u>70</u> (A)	<u>260</u> (B)																				
Prevalence Index = B/A = <u>3.71</u>																					
1. <u>Betula occidentalis</u>		<u>10</u>	<u>Yes</u>	<u>FACW</u>																	
2.																					
3.																					
4.																					
5.																					
=Total Cover																					
Herb Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>5</u> - Wetland Non-Vascular Plants <sup>1</sup> <u>Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</u> <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Bromus inermis</u>		<u>30</u>	<u>Yes</u>	<u>UPL</u>																	
2. <u>Agrostis</u>		<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Cirsium arvense</u>		<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
4. <u>Equisetum arvense</u>		<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					
11.																					
=Total Cover																					
Woody Vine Stratum	(Plot size: <u>5</u> )																				
1.																					
2.																					
=Total Cover																					
% Bare Ground in Herb Stratum <u>5</u>																					
<b>Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b>																					

Remarks:



**SOIL**

Sampling Point: UP19

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-14	10YR 3/2	100					Loamy/Clayey	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)		

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes _____ No <u>X</u>
Remarks: dry soil	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>	
<b>Primary Indicators (minimum of one is required; check all that apply)</b>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

<b>Field Observations:</b>	
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____	
Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	

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

Remarks:  
None observed.

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 8/02/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: WL20  
 Investigator(s): Fillipi, Kizlinski, Head Section, Township, Range: SW4 S33, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74282 Long: 105.45303 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
 Large wetland on an inside bend of Clear Creek

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1.					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
2.					
3.					
4.					
=Total Cover					
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				
1.	<u>Salix exigua</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<b>Prevalence Index worksheet:</b> Total % Cover of:      Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>60</u> x 2 = <u>120</u> FAC species <u>35</u> x 3 = <u>105</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>100</u> (A) <u>245</u> (B) Prevalence Index = B/A = <u>2.45</u>
2.	<u>Betula occidentalis</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
3.					
4.					
5.					
=Total Cover					
Herb Stratum	(Plot size: <u>5</u> )				
1.	<u>Agrostis stolonifera</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <input checked="" type="checkbox"/> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>5</u> - Wetland Non-Vascular Plants <sup>1</sup> <u>        </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2.	<u>Heracleum maximum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
3.	<u>Achillea millefolium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
4.	<u>Juncus balticus</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
=Total Cover					
Woody Vine Stratum	(Plot size: <u>5</u> )				
1.					<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2.					
=Total Cover					
% Bare Ground in Herb Stratum <u>        </u>					

Remarks:

**SOIL**

Sampling Point: WL20

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR 3/4	100					Sandy	
3-6	10YR 4/3	100	7.5YR 4/6	5	C	M	Sandy	Prominent redox concentrations
6-16	10YR 4/3	100	7.5YR 4/6	25	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>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:  
 Problematic soils. Young floodplain deposits do not meet chroma for S5, but redox are clear

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

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

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

Remarks:  
 Not strong hydro, but proximity to river grants indicator

**U.S. Army Corps of Engineers**  
**WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region**  
 See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024  
 Requirement Control Symbol EXEMPT:  
 (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 7/27/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: WL21  
 Investigator(s): Fillipi ad Kizlinski Section, Township, Range: SE4 S33, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74372 Long: 105.49604 Datum: NAD83  
 Soil Map Unit Name: Mammoth-Ohman-Rock outcrop complex, 30 to 60 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:  
 Floodplain wetland along the bank of Clear Creek

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1.					
2.					
3.					
4.					=Total Cover
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15</u> )					
1.	<u>Betula occidentalis</u>	<u>70</u>	<u>Yes</u>	<u>FACW</u>	<b>Prevalence Index worksheet:</b> Total % Cover of: Multiply by: OBL species <u>20</u> x 1 = <u>20</u> FACW species <u>90</u> x 2 = <u>180</u> FAC species <u>30</u> x 3 = <u>90</u> FACU species <u>10</u> x 4 = <u>40</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>150</u> (A) <u>330</u> (B) Prevalence Index = B/A = <u>2.20</u>
2.	<u>Apocynum androsaemifolium</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
3.	<u>Maianthemum stellatum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
4.					
5.					
=Total Cover					
<b>Herb Stratum</b> (Plot size: <u>5</u> )					
1.	<u>Juncus balticus</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <input checked="" type="checkbox"/> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>5</u> - Wetland Non-Vascular Plants <sup>1</sup> <u>        </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2.	<u>Carex nebrascensis</u>	<u>10</u>	<u>No</u>	<u>OBL</u>	
3.	<u>Agrostis stolonifera</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
4.	<u>Carex utriculata</u>	<u>10</u>	<u>No</u>	<u>OBL</u>	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
=Total Cover					
<b>Woody Vine Stratum</b> (Plot size: <u>5</u> )					
1.					<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2.					
=Total Cover					
% Bare Ground in Herb Stratum <u>        </u>					

Remarks:

**SOIL**

Sampling Point: WL21

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 3/3	85	7.5YR 4/6	15	C	M	Sandy	Prominent redox concentrations
5-12	10YR 3/2	75	7.5YR 4/6	20	C	M	Sandy	Prominent redox concentrations
			10YR 5/2	5	D	M		

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

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

<b>Restrictive Layer (if observed):</b> Type: <u>Cobbles / Gravel</u> Depth (inches): <u>12</u>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Shovel refusal at 12, dense cobbles	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

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

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

Remarks:  
Not strong hydro, but granted due to proximity to river

**U.S. Army Corps of Engineers**  
**WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region**  
 See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024  
 Requirement Control Symbol: EXEMPT:  
 (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 8/2/2022  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL22  
 Investigator(s): Fillipi, Kizlinski, Head Section, Township, Range: SE4 S33, T3S, R72W  
 Landform (hillside, terrace, etc.): Island Local relief (concave, convex, none): flat Slope (%): 0  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74324 Long: 105.44537 Datum: NAD83  
 Soil Map Unit Name: Mammoth-Ohman-Rock outcrop complex, 30 to 60 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:  
 Small island supporting a wetland along the bank of Clear Creek

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1.					
2.					
3.					
4.					=Total Cover
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				<b>Prevalence Index worksheet:</b> Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>75</u> x 2 = <u>150</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>95</u> (A) <u>210</u> (B) Prevalence Index = B/A = <u>2.21</u>
1. <u>Salix exigua</u>		<u>70</u>	<u>Yes</u>	<u>FACW</u>	
2.					
3.					
4.					
5.					=Total Cover
Herb Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Agrostis stolonifera</u>		<u>10</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Juncus balticus</u>		<u>5</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Equisetum arvense</u>		<u>10</u>	<u>Yes</u>	<u>FAC</u>	
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					=Total Cover
Woody Vine Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.					
2.					
% Bare Ground in Herb Stratum <u>5</u>					

Remarks:

**SOIL**

Sampling Point: WL22

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/2	100	7.5YR 4/6	3	C	M	Sandy	Prominent redox concentrations
4-12	10YR 3/3	100					Sandy	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)	
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)		

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

<b>Restrictive Layer (if observed):</b> Type: <u>Cobbles</u> Depth (inches): <u>12</u>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Redox at surface, clear

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u> (includes capillary fringe)	

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

Remarks:

**U.S. Army Corps of Engineers**  
**WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region**  
 See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024  
 Requirement Control Symbol EXEMPT:  
 (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 8/2/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: WL23  
 Investigator(s): Fillipi, Kizlinski, Head Section, Township, Range: SE4 S33, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.743071 Long: -105.443967 Datum: NAD83  
 Soil Map Unit Name: Mammoth-Ohman-Rock outcrop complex, 30 to 60 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:  
 Floodplain wetland on an inside bend of Clear Creek

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1.					
2.					
3.					
4.					=Total Cover
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				<b>Prevalence Index worksheet:</b> Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>130</u> x 2 = <u>260</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>135</u> (A) <u>275</u> (B) Prevalence Index = B/A = <u>2.04</u>
1. <i>Salix exigua</i>		<u>30</u>	<u>Yes</u>	<u>FACW</u>	
2. <i>Salix bebbiana</i>		<u>10</u>	<u>Yes</u>	<u>FACW</u>	
3. <i>Betula occidentalis</i>		<u>10</u>	<u>Yes</u>	<u>FACW</u>	
4.					
5.					=Total Cover
Herb Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <i>Juncus balticus</i>		<u>80</u>	<u>Yes</u>	<u>FACW</u>	
2. <i>Agrostis stolonifera</i>		<u>5</u>	<u>No</u>	<u>FAC</u>	
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					=Total Cover
85					
Woody Vine Stratum	(Plot size: <u>    </u> )				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.					
2.					
					=Total Cover
% Bare Ground in Herb Stratum <u>    </u>					

Remarks:



**SOIL**

Sampling Point: WL23

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/3	100	7.5YR 4/6	5	C	M	Sandy	Prominent redox concentrations
4-14	10YR 2/1	100	7.5YR 4/6	25	C	M	Sandy	Prominent redox concentrations

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Water filled bottom, water table at 10

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b>	
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10</u>	
Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>3</u> (includes capillary fringe)	

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

Remarks:

**U.S. Army Corps of Engineers**  
**WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region**  
 See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024  
 Requirement Control Symbol EXEMPT:  
 (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 8/2/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: UP021  
 Investigator(s): Fillipi, Kizlinski, Head Section, Township, Range: SE4 S33, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74314 Long: 105.44514 Datum: NAD83  
 Soil Map Unit Name: Mammoth-Ohman-Rock outcrop complex, 30 to 60 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If no, explain in Remarks.)  
 Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation     , Soil X, or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>?</u> No <u>    </u>	Is the Sampled Area within a Wetland? Yes <u>    </u> No <u>X</u>
Hydric Soil Present? Yes <u>    </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>    </u> No <u>X</u>	

Remarks:  
 Portion of floodplain further from river is UPL, lacks hydro, soils are close, as expected

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>    </u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
<u>    </u> =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Prevalence Index worksheet:</b> <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>75</u></td> <td>x 2 = <u>150</u></td> </tr> <tr> <td>FAC species <u>75</u></td> <td>x 3 = <u>225</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>150</u> (A)</td> <td><u>375</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.50</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>75</u>	x 2 = <u>150</u>	FAC species <u>75</u>	x 3 = <u>225</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>150</u> (A)	<u>375</u> (B)	Prevalence Index = B/A = <u>2.50</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>75</u>	x 2 = <u>150</u>																			
FAC species <u>75</u>	x 3 = <u>225</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>150</u> (A)	<u>375</u> (B)																			
Prevalence Index = B/A = <u>2.50</u>																				
1. <u>Betula occidentalis</u>	<u>70</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Salix exigua</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
<u>75</u> =Total Cover																				
Herb Stratum (Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b> <u>    </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>    </u> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <u>    </u> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>    </u> 5 - Wetland Non-Vascular Plants <sup>1</sup> <u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Agrostis stolonifera</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
11. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
<u>75</u> =Total Cover																				
Woody Vine Stratum (Plot size: <u>    </u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>																	
<u>    </u> =Total Cover																				
% Bare Ground in Herb Stratum <u>5</u>																				

Remarks:  
 Mix of veg. transition area to full UPL

**SOIL**

Sampling Point: UP021

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR 2/2	100					Sandy	Loamy sand
3-14	10YR 4/6	100					Sandy	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

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

**Restrictive Layer (if observed):**  
 Type:           Cobbles / Gravel            
 Depth (inches):           14          

**Hydric Soil Present?**      Yes             No   X  

Remarks:  
 Dark surface but bright beneath, dry

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present?	Yes <u>      </u> No <u>  X  </u>	Depth (inches): <u>          </u>	<b>Wetland Hydrology Present?</b> Yes <u>      </u> No <u>  X  </u>
Water Table Present?	Yes <u>      </u> No <u>  X  </u>	Depth (inches): <u>          </u>	
Saturation Present?	Yes <u>      </u> No <u>  X  </u>	Depth (inches): <u>          </u>	
(includes capillary fringe)			

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

Remarks:  
 No Hydrology

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 8/2/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: WL24  
 Investigator(s): Fillipi, Kizlinski, Head Section, Township, Range: SE4 S33, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74275 Long: 105.44379 Datum: NAD83  
 Soil Map Unit Name: Mammoth-Ohman-Rock outcrop complex, 30 to 60 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
 Floodplain wetland on an inside bend of Clear Creek

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1.					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
2.					
3.					
4.					
=Total Cover					
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				
1.	<u>Salix exigua</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>	<b>Prevalence Index worksheet:</b> Total % Cover of: Multiply by: OBL species <u>10</u> x 1 = <u>10</u> FACW species <u>50</u> x 2 = <u>100</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>70</u> (A) <u>140</u> (B) Prevalence Index = B/A = <u>2.00</u>
2.	<u>Salix bebbiana</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	
3.					
4.					
5.					
=Total Cover					
Herb Stratum	(Plot size: <u>5</u> )				
1.	<u>Agrostis stolonifera</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2.	<u>Scirpus pallidus</u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>	
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
=Total Cover					
Woody Vine Stratum	(Plot size: <u>5</u> )				
1.					<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2.					
=Total Cover					
% Bare Ground in Herb Stratum _____					

Remarks:

**SOIL**

Sampling Point: WL24

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-2	10YR 3/2	100					Loamy/Clayey	
2-6	10YR 3/2	95	7.5YR 5/6	5	C	M	Sandy	Prominent redox concentrations
6-16	10YR 4/4	80	7.5YR 5/6	20	C	M	Sandy	Distinct redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>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:  
 Multiple depositional layers

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>11</u>	

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

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 8/2/2022  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL26  
 Investigator(s): Fillipi, Kizlinski, Head Section, Township, Range: SW4 S34, T3S, R72W  
 Landform (hillside, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.74642 Long: 105.43599 Datum: NAD83  
 Soil Map Unit Name: Resort-Cathedral-Rubble land complex, 30 to 60 percent slopes NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil , or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
--	--

Remarks:  
 Small wetland along bank of Clear Creek near rafting take out, foot traffic, minor disturbances

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1.	_____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2.	_____	_____	_____	_____																	
3.	_____	_____	_____	_____																	
4.	_____	_____	_____	_____																	
				=Total Cover																	
Sapling/Shrub Stratum	(Plot size: <u>15</u> )																				
1.	<u>Salix exigua</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<b>Prevalence Index worksheet:</b> <table style="width:100%; font-size: small;"> <tr> <td style="text-align: center;">Total % Cover of:</td> <td style="text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>10</u></td> <td>x 1 = <u>10</u></td> </tr> <tr> <td>FACW species <u>35</u></td> <td>x 2 = <u>70</u></td> </tr> <tr> <td>FAC species <u>20</u></td> <td>x 3 = <u>60</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>65</u> (A)</td> <td><u>140</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.15</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>10</u>	x 1 = <u>10</u>	FACW species <u>35</u>	x 2 = <u>70</u>	FAC species <u>20</u>	x 3 = <u>60</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>65</u> (A)	<u>140</u> (B)	Prevalence Index = B/A = <u>2.15</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>10</u>	x 1 = <u>10</u>																				
FACW species <u>35</u>	x 2 = <u>70</u>																				
FAC species <u>20</u>	x 3 = <u>60</u>																				
FACU species <u>0</u>	x 4 = <u>0</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>65</u> (A)	<u>140</u> (B)																				
Prevalence Index = B/A = <u>2.15</u>																					
2.	_____	_____	_____	_____																	
3.	_____	_____	_____	_____																	
4.	_____	_____	_____	_____																	
5.	_____	_____	_____	_____																	
				=Total Cover																	
Herb Stratum	(Plot size: <u>5</u> )																				
1.	<u>Agrostis stolonifera</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> _____ 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2.	<u>Eleocharis palustris</u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>																	
3.	<u>Juncus balticus</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>																	
4.	_____	_____	_____	_____																	
5.	_____	_____	_____	_____																	
6.	_____	_____	_____	_____																	
7.	_____	_____	_____	_____																	
8.	_____	_____	_____	_____																	
9.	_____	_____	_____	_____																	
10.	_____	_____	_____	_____																	
11.	_____	_____	_____	_____																	
				=Total Cover																	
Woody Vine Stratum	(Plot size: <u>5</u> )																				
1.	_____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____																
2.	_____	_____	_____	_____																	
				=Total Cover																	
% Bare Ground in Herb Stratum _____																					

Remarks:

**SOIL**

Sampling Point: WL26

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 3/2	90	7.5YR 4/6	10	C	M	Sandy	Prominent redox concentrations
5-10	10YR 3/2	65	7.5YR 4/6	35	C	M	Sandy	Prominent redox concentrations

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if observed):</b> Type: <u>Cobbles / Gravel</u> Depth (inches): <u>10</u>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Shallow, refusal at 10 in. dense cobbles	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u> </u>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u> </u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10</u> (includes capillary fringe)	

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

Remarks:

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region</b> See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 8/2/2022  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL27  
 Investigator(s): Fillipi, Kizlinski, Head Section, Township, Range: SE4 S34, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.742229 Long: -105.431354 Datum: NAD83  
 Soil Map Unit Name: Resort-Cathedral-Rubble land complex, 30 to 60 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
 Small wetland adjacent to bridge along Clear Creek. Same wetland on opposite bank (WL28 and WL29)

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																									
1.					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																								
2.																													
3.																													
4.																													
=Total Cover					<b>Prevalence Index worksheet:</b> <table style="width:100%; font-size: small;"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> <td></td> </tr> <tr> <td>OBL species <u>40</u></td> <td>x 1 =</td> <td><u>40</u></td> </tr> <tr> <td>FACW species <u>25</u></td> <td>x 2 =</td> <td><u>50</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 =</td> <td><u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 =</td> <td><u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 =</td> <td><u>0</u></td> </tr> <tr> <td>Column Totals: <u>65</u> (A)</td> <td></td> <td><u>90</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A =</td> <td><u>1.38</u></td> </tr> </table>	Total % Cover of:	Multiply by:		OBL species <u>40</u>	x 1 =	<u>40</u>	FACW species <u>25</u>	x 2 =	<u>50</u>	FAC species <u>0</u>	x 3 =	<u>0</u>	FACU species <u>0</u>	x 4 =	<u>0</u>	UPL species <u>0</u>	x 5 =	<u>0</u>	Column Totals: <u>65</u> (A)		<u>90</u> (B)	Prevalence Index = B/A =		<u>1.38</u>
Total % Cover of:	Multiply by:																												
OBL species <u>40</u>	x 1 =	<u>40</u>																											
FACW species <u>25</u>	x 2 =	<u>50</u>																											
FAC species <u>0</u>	x 3 =	<u>0</u>																											
FACU species <u>0</u>	x 4 =	<u>0</u>																											
UPL species <u>0</u>	x 5 =	<u>0</u>																											
Column Totals: <u>65</u> (A)		<u>90</u> (B)																											
Prevalence Index = B/A =		<u>1.38</u>																											
Sapling/Shrub Stratum	(Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status																									
1. <u>Salix exigua</u>		<u>20</u>	<u>Yes</u>	<u>FACW</u>																									
2.																													
3.																													
4.																													
5.																													
=Total Cover																													
Herb Stratum	(Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status																									
1. <u>Carex nebrascensis</u>		<u>30</u>	<u>Yes</u>	<u>OBL</u>																									
2. <u>Juncus drummondii</u>		<u>5</u>	<u>No</u>	<u>FACW</u>																									
3. <u>Eleocharis palustris</u>		<u>10</u>	<u>Yes</u>	<u>OBL</u>																									
4.																													
5.																													
6.																													
7.																													
8.																													
9.																													
10.																													
11.																													
=Total Cover																													
Woody Vine Stratum	(Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status																									
1.																													
2.																													
=Total Cover																													
% Bare Ground in Herb Stratum _____					<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																								

Remarks:



**SOIL**

Sampling Point: WL27

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-9	10YR 3/2	100	7.5YR 4/6	30	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if observed):</b> Type: <u>Cobbles / Gravel</u> Depth (inches): <u>9</u>	Hydric Soil Present?      Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Shallow to dense cobbles, but surface redox meets S5

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
<b>Primary Indicators (minimum of one is required; check all that apply)</b>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u> Water Table Present?      Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u> Saturation Present?        Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>          </u> (includes capillary fringe)	Wetland Hydrology Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**U.S. Army Corps of Engineers**  
**WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region**  
 See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024  
 Requirement Control Symbol EXEMPT:  
 (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 8/2/2022  
 Applicant/Owner: CDDOT - Region 1 State: CO Sampling Point: WL31  
 Investigator(s): Fillipi, Kizlinski, Head Section, Township, Range: SE4 S34, T3S, R72W  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): flat Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.741726 Long: -105.4308 Datum: NAD83  
 Soil Map Unit Name: Resort-Cathedral-Rubble land complex, 30 to 60 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:  
 Wetland on the floodplain of Clear Creek. Portions of wetland near dirt driveway on inside bend disturbed with erosional deposition of fill, but majority of wetland intact.

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1.					
2.					
3.					
4.					=Total Cover
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				<b>Prevalence Index worksheet:</b> Total % Cover of: Multiply by: OBL species <u>10</u> x 1 = <u>10</u> FACW species <u>125</u> x 2 = <u>250</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>145</u> (A) <u>290</u> (B) Prevalence Index = B/A = <u>2.00</u>
1. <i>Salix exigua</i>		<u>50</u>	<u>Yes</u>	<u>FACW</u>	
2. <i>Salix bebbiana</i>		<u>5</u>	<u>No</u>	<u>FACW</u>	
3. <i>Betula occidentalis</i>		<u>10</u>	<u>No</u>	<u>FACW</u>	
4.					
5.					=Total Cover
Herb Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <i>Juncus balticus</i>		<u>60</u>	<u>Yes</u>	<u>FACW</u>	
2. <i>Agrostis stolonifera</i>		<u>10</u>	<u>No</u>	<u>FAC</u>	
3. <i>Eleocharis palustris</i>		<u>10</u>	<u>No</u>	<u>OBL</u>	
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					=Total Cover
Woody Vine Stratum	(Plot size: <u>    </u> )				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.					
2.					
% Bare Ground in Herb Stratum <u>    </u>					

Remarks:

**SOIL**

Sampling Point: WL31

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/6	100	7.5YR 4/6	2	C	M	Sandy	Faint redox concentrations
4-14	10YR 3/3	100	7.5YR 4/6	2	C	M	Sandy	Prominent redox concentrations

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)	
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Depressions (F8)		

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
---	---

Remarks:  
Portions of wetland near dirt driveway disturbed

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>	
<b>Primary Indicators (minimum of one is required; check all that apply)</b>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

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

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

Remarks:  
Wetland Hydrology is present but barely

**U.S. Army Corps of Engineers**  
**WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region**  
 See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024  
 Requirement Control Symbol EXEMPT:  
 (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 9/7/22  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL32  
 Investigator(s): Fillipi, Kizlinski Section, Township, Range: NE4 S3 T4S R72W  
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.737890 Long: -105.432492 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:  
 Johnson Gulch flows NE and meets I-70 at the sampled location. A culvert conveys flow beneath 70; however, debris has interrupted flow to the culvert and caused WL32 (PEM) and WL33 (PSS) to form at the inlet. No channel is present through the wetland.

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																
1.																					
2.																					
3.																					
4.					=Total Cover																
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				<b>Prevalence Index worksheet:</b> <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>80</u></td> <td>x 2 = <u>160</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>200</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.22</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>80</u>	x 2 = <u>160</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>90</u> (A)	<u>200</u> (B)	Prevalence Index = B/A = <u>2.22</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>0</u>	x 1 = <u>0</u>																				
FACW species <u>80</u>	x 2 = <u>160</u>																				
FAC species <u>0</u>	x 3 = <u>0</u>																				
FACU species <u>10</u>	x 4 = <u>40</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>90</u> (A)	<u>200</u> (B)																				
Prevalence Index = B/A = <u>2.22</u>																					
1. <u>Salix exigua</u>		<u>50</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Alnus incana</u>		<u>5</u>	<u>No</u>	<u>FACW</u>																	
3.																					
4.																					
5.					=Total Cover																
Herb Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Phalaris arundinacea</u>		<u>20</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Rubus idaeus</u>		<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Phalaris arundinacea</u>		<u>5</u>	<u>No</u>	<u>FACW</u>																	
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					
11.					=Total Cover																
Woody Vine Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																
1.																					
2.					=Total Cover																
% Bare Ground in Herb Stratum <u>10</u>																					

Remarks:  
 Patchy, recent debris and sediment flows have covered veg in places with seedlings emerging

**SOIL**

Sampling Point: WL32

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-14	10YR 4/2	100					Loamy/Clayey	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F6)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Redox Dark Surface (F7)		
	<input type="checkbox"/> Redox Depressions (F8)		

<sup>3</sup>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:  
 Deposits of sediment from recent storm event causing flows in Johnson Gulch that feeds this wetland complex. No redox, but granted.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (2 or more required)</b>	
<b>Primary Indicators (minimum of one is required; check all that apply)</b>			
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

**Field Observations:**

Surface Water Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (inches): <u>1</u>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (inches): <u>12</u>	
Saturation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (inches): <u>0</u>	
(includes capillary fringe)				

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

Remarks:  
 Clear hydrology, groundwater and surface input.

**U.S. Army Corps of Engineers**  
**WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region**  
 See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024  
 Requirement Control Symbol EXEMPT:  
 (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Floyd Hill to Veterans Memorial Tunnel City/County: Clear Creek County Sampling Date: 9/7/22  
 Applicant/Owner: CDOT - Region 1 State: CO Sampling Point: WL33  
 Investigator(s): Fillipi, Kizlinski Section, Township, Range: NE4 S3 T4S R72W  
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1-2  
 Subregion (LRR): LRR E, MLRA 48A Lat: 39.737889 Long: -105.432582 Datum: NAD83  
 Soil Map Unit Name: Cathedral-Rock outcrop complex, 30 to 70 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:  
 Johnson Gulch flows NE and meets I-70 at the sampled location. A culvert conveys flow beneath 70; however, debris has interrupted flow to the culvert and caused WL32 (PEM) and WL33 (PSS) to form at the inlet. No channel is present through the wetland.

**VEGETATION – Use scientific names of plants.**

Tree Stratum	(Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																																
1.																																					
2.																																					
3.																																					
4.					=Total Cover																																
Sapling/Shrub Stratum	(Plot size: <u>15</u> )				<b>Prevalence Index worksheet:</b> <table border="0"> <tr> <td>Total % Cover of:</td> <td></td> <td>Multiply by:</td> <td></td> </tr> <tr> <td>OBL species</td> <td><u>35</u></td> <td>x 1 =</td> <td><u>35</u></td> </tr> <tr> <td>FACW species</td> <td><u>35</u></td> <td>x 2 =</td> <td><u>70</u></td> </tr> <tr> <td>FAC species</td> <td><u>0</u></td> <td>x 3 =</td> <td><u>0</u></td> </tr> <tr> <td>FACU species</td> <td><u>0</u></td> <td>x 4 =</td> <td><u>0</u></td> </tr> <tr> <td>UPL species</td> <td><u>0</u></td> <td>x 5 =</td> <td><u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>70</u> (A)</td> <td></td> <td><u>105</u> (B)</td> </tr> <tr> <td>Prevalence Index = B/A =</td> <td></td> <td></td> <td><u>1.50</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	<u>35</u>	x 1 =	<u>35</u>	FACW species	<u>35</u>	x 2 =	<u>70</u>	FAC species	<u>0</u>	x 3 =	<u>0</u>	FACU species	<u>0</u>	x 4 =	<u>0</u>	UPL species	<u>0</u>	x 5 =	<u>0</u>	Column Totals:	<u>70</u> (A)		<u>105</u> (B)	Prevalence Index = B/A =			<u>1.50</u>
Total % Cover of:		Multiply by:																																			
OBL species	<u>35</u>	x 1 =	<u>35</u>																																		
FACW species	<u>35</u>	x 2 =	<u>70</u>																																		
FAC species	<u>0</u>	x 3 =	<u>0</u>																																		
FACU species	<u>0</u>	x 4 =	<u>0</u>																																		
UPL species	<u>0</u>	x 5 =	<u>0</u>																																		
Column Totals:	<u>70</u> (A)		<u>105</u> (B)																																		
Prevalence Index = B/A =			<u>1.50</u>																																		
1. <u>Alnus incana</u>		<u>5</u>	<u>Yes</u>	<u>FACW</u>																																	
2.																																					
3.																																					
4.																																					
5.					=Total Cover																																
Herb Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
1. <u>Phalaris arundinacea</u>		<u>30</u>	<u>Yes</u>	<u>FACW</u>																																	
2. <u>Typha angustifolia</u>		<u>30</u>	<u>Yes</u>	<u>OBL</u>																																	
3. <u>Scirpus microcarpus</u>		<u>5</u>	<u>No</u>	<u>OBL</u>																																	
4.																																					
5.																																					
6.																																					
7.																																					
8.																																					
9.																																					
10.																																					
11.					=Total Cover																																
65					=Total Cover																																
Woody Vine Stratum	(Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																
1.																																					
2.																																					
					=Total Cover																																
% Bare Ground in Herb Stratum	<u>10</u>																																				

Remarks:  
 Patchy, recent debris and sediment flows have covered veg in places with seedlings emerging

**SOIL**

Sampling Point: WL33

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-14	10YR 2/1	100					Sandy	

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

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

<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 2 cm Muck (A10) (LRR A, E)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D, G)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G)	<input type="checkbox"/> Depleted Dark Surface (F7)	
	<input type="checkbox"/> Redox Depressions (F8)	

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes  No

Remarks:  
Deposits of sediment from recent storm event causing flows in Johnson Gulch that feeds this wetland complex. No redox, but granted.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Secondary Indicators (2 or more required)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<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"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>2</u>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>9</u>	
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>5</u>	
(includes capillary fringe)			

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

Remarks:  
Clear hydrology, groundwater and surface input.

# Appendix D

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Photos





**Photo Point 1:** Wetland WL1 along the right bank of Clear Creek, facing downstream. Dominated by narrow-leaf willow, it is a fringe along the bank.



**Photo Point 2:** Facing upstream, wetland WL2 is a narrow-leaf willow dominated fringe along Clear Creek.



**Photo Point 3:** Water birch and Baltic rush dominate wetland WL4, facing downstream.



**Photo Point 4:** Facing downstream on a reach of Clear Creek. The channel is confined between rip rap along I-70 on the left bank, and a rip rap-stabilized bank on the right.



**Photo Point 5:** About 1,500 ft downstream from Photo Point 4, facing upstream through the same channelized reach.



**Photo Point 6:** Wetland WL5 is mostly narrow-leaf willow with some hydric herbs, situated on the floodplain, facing downstream.



**Photo Point 7:** Facing upstream along wetland WL6, a fringe along the creek dominated by Nebraska sedge and narrow-leaf willow.



**Photo Point 8:** Wetland WL7 is a dense mix of narrow-leaf willow, water birch, and gray willow, facing upstream.



**Photo Point 9:** Leafy tussock sedge dominates wetland WL8, a depression on the larger floodplain WL7, facing west.



**Photo Point 10:** Formed on an outside bend of the creek, narrow-leaf willow and Baltic rush dominate wetland WL10, facing upstream.



**Photo Point 11:** Facing upstream at wetland WL11, it is a fringe of water birch with other hydric herbs.



**Photo Point 12:** Wetland WL12 is mostly an island with a short connection to the shore, creating a side channel.



**Photo Point 13:** Wetland WL14 is mostly narrow-leaf willow and Baltic rush, confined to the bank between bridges. Facing west from the opposite bank.



**Photo Point 14:** Facing east, wetland WL15 is a monoculture of soft-stem club-rush. WL14 is in the background along the creek.



**Photo Point 15:** Facing downstream at wetland WL16, narrow-leaf willow and water birch are common with Baltic rush in the herbaceous layer.



**Photo Point 16:** Wetland WL17 is a small rocky island of narrow-leaf willow and gray willow, facing north from the narrow side channel along the right bank.





**Photo Point 17:** Facing upstream, this reach of Clear Creek is confined by rip rap on both banks, I-70 on the left bank and the trail on the right bank.



**Photo Point 17:** Facing downstream, no wetlands or floodplains are present through this reach.



**Photo Point 18:** Wetland WL18 is a narrow-leaf willow-dominated island, facing upstream near the western end of the feature.



**Photo Point 19:** Narrow-leaf willow and water birch dominate the shrub layer, while Baltic rush and spreading bent for a dense herb layer, facing upstream.



**Photo Point 20:** Facing upstream, this reach of Clear Creek is confined by a steep embankment to I-70 and a rip rap-stabilized right bank.



**Photo Point 20:** Facing downstream, channelization has prevented floodplain and wetland development through this reach.



**Photo Point 21:** Sawmill Gulch, facing downstream. OHWMs are three to four feet wide, clear bed and bank and change in vegetation.



**Photo Point 22:** Wetland WL21 is a dense fringe of water birch along the right bank of the creek, facing downstream.



**Photo Point 23:** Facing upstream, WL22 is a small island dominated by narrow-leaf willow. A narrow side channel flows between the island and the right bank of the creek.



**Photo Point 24:** Baltic rush and narrow-leaf willow dominate wetland WL23, formed along an inside bend in the creek, facing downstream.



**Photo Point 25:** Facing upstream at wetland WL24, narrow-leaf willow dominates this floodplain. The upstream end of island wetland WL25 is on the right, and WL23 is in the background, opposite bank.



**Photo Point 26:** Near Hwy 6/I-70 merge facing upstream, this reach is channelized with rip rap and concrete walls.



**Photo Point 26:** Clear Creek flowing under I-70, facing downstream. Flow is directed to the opening with concrete walls and rip rap.



**Photo Point 27:** Wetland WL26 is a narrow fringe of narrow-leaf willow and spreading bend, facing upstream.



**Photo Point 28:** Clear Creek, facing upstream, has been channelized through this reach.



**Photo Point 28:** Facing downstream, both banks have been stabilized with rip rap.





**Photo Point 29:** Rip rap stabilization continues downstream from Photo Point 28, facing upstream.



**Photo Point 29:** Facing downstream, steep rocky banks do not support wetland formation.



**Photo Point 30:** Wetland WL27 is a narrow fringe of Nebraska sedge and narrow-leaf willow, facing downstream.



**Photo Point 31:** From the embankment facing south, wetland WL31 is a fringe in the foreground, wetland WL30 is the large narrow-leaf willow along the opposite bank.



**Photo Point 32:** Facing south from above, wetland WL32 is the narrow-leaf willow portion, WL33 is the narrow-leaf cattail-dominated portion.



**Photo Point 33:** Wetland WL33 is formed where Johnson Gulch meets I-70 and backs up at a partially-blocked culvert, facing south.



**Photo Point 34:** Drainage OW2, an intermittent or ephemeral tributary to Clear Creek. Facing upstream from the trail, a culvert carries it to wetland WL24 from this point.