

**South Wadsworth Boulevard/Waterton Road
Intersection Feasibility Study**

Wetland Finding

Jefferson County, Colorado



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JACOBS™

Prepared for:

**Colorado Department of Transportation
and Jefferson County**

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1. Introduction

The following is a wetland finding for the South Wadsworth/Waterton Road Intersection Feasibility Study Project and has been written in compliance with Executive Order 11990, "Protection of Wetlands," and is in accordance with 23 CFR 771, 23 CFR 777, and Technical Advisory T6640.8A.

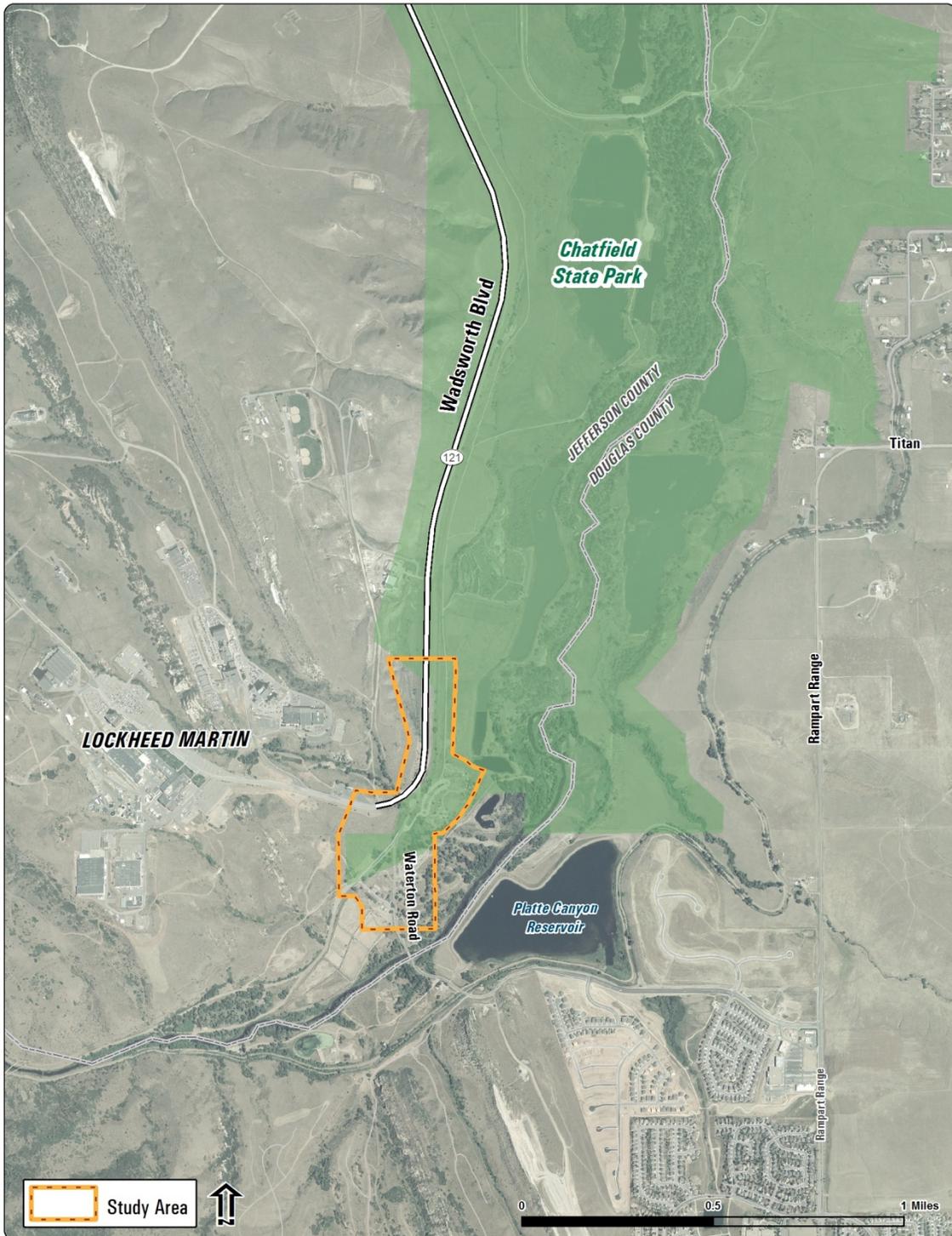
Jefferson County, Douglas County, and Lockheed Martin Corporation, Inc. (Lockheed Martin), in cooperation with CDOT and the Federal Highway Administration (FHWA), are evaluating improvements to the South Wadsworth/Waterton Road intersection to address the transportation problems in the area of this critical intersection (see **Figure 1: Vicinity Map**). Based on discussions with CDOT and FHWA, a CDOT Form 128 (Categorical Exclusion) is being prepared for the project.

The South Wadsworth/Waterton Road intersection project study area (Study Area) is located in Jefferson County, Colorado and is represented on United States Geological Survey quadrangle Kassler, Township 6 South, Range 69 West. The Study Area extends approximately 300 feet north of the Platte River, through the intersection with South Wadsworth Boulevard and continues up Wadsworth for another 1,800 ft. Adjacent to the corridor on the east side of the roadway the Study Area includes Denver Water property and the Audubon Center/Discovery Pavilion and on the west side extends along the roadway leading to the Lockheed Martin guard station Land use in the area consists of rangeland, croplands, and developed areas.

Waterton Road is a two-lane road that begins at the intersection with South Wadsworth Boulevard and extends south across the Platte River into Douglas County. It then turns eastward and extends approximately one mile to its terminus at Rampart Range Road.

The land surrounding the intersection and within the Study Area is primarily open and publicly accessible. It includes United States Army Corps of Engineers (USACE) land associated with Chatfield Reservoir, and Denver Water property. The Denver Water property includes the former Kassler Water Plant (now called the Kassler Center), which is subleased by the Thorne Ecological Institute for environmental education programs.

Figure 1: Vicinity Map



The Denver Parks and Recreation Department leases 750 acres of the USACE property located west of South Wadsworth Boulevard for the Denver Botanic Gardens at Chatfield State Park. The Colorado State Department of Natural Resources, State Parks Division leases 5,378 acres located on the east side of South Wadsworth Boulevard for Chatfield State Park. The Audubon Society of Greater Denver (ASGD) subleases a portion of land within Chatfield State Park directly adjacent to the South Wadsworth Boulevard/Waterton Road intersection. The remaining land in the Study Area is privately owned, most of which is owned by Lockheed Martin.

The Study Area is located at the edge of two sub-ecoregions: sub-ecoregion 21d (Foothill Shrublands) and sub-ecoregion 25l (Front Range Fans), as defined by Environmental protection Agency (EPA) (Chapman 2006). Foothill Shrublands are typically dominated by sagebrush and mountain mahogany shrublands, pinyon-juniper woodlands, scattered scrub-oak shrublands, and grasslands. Front Range Fans are typified by grasslands, but have been converted mostly to rangeland, croplands, and developed areas. The Study Area is dominated by the rights-of-way for South Wadsworth Boulevard and Waterton Road, the parking lots for the Audubon Nature Center and Waterton Canyon/Colorado trails, and several hiking trails. Areas adjacent to the roadway are infested by several noxious weed species.

The Study Area is located within the Chatfield Watershed, which includes Plum Creek, Deer Creek, and the South Platte River and its tributaries between Strontia Springs Reservoir in the foothills above the Study Area to Chatfield Reservoir northeast of the Study Area. Hydrography data for the project area were downloaded from the National Hydrography Dataset and used to determine pertinent aquatic resources within the project area.

The segment of the South Platte River adjacent to the Study Area is considered the tailwaters of Chatfield Reservoir, which is located approximately 1.25 miles from the northern limits of the Study Area. The USACE constructed the Chatfield Reservoir in response to flooding events along the Front Range, and it provides flood control and water supply to Front Range communities.

The Study Area is bisected by Brush Creek, an intermittent stream that flows southeast under South Wadsworth Boulevard to its confluence with the South Platte River. Designated uses for Brush Creek include aquatic life, recreation, and agriculture.

2. Project Description

Over the last five years, Douglas County has developed preliminary plans for a four-lane roadway from the intersection into Douglas County, and options for intersection improvements. The county developed these plans in response to ongoing Douglas County development and required access improvements for new developments in the immediate vicinity.

JeffCo initiated a Feasibility Study to identify a Preferred Alternative to address the transportation problems associated with the intersection. This study identifies potential environmental impacts that may result from implementation of the Preferred Alternative in a manner that is consistent with environmental documentation required by the National Environmental Policy Act of 1969 (NEPA) to move the project into to the final design and construction phases.

The Preferred Alternative would provide a grade-separation at the existing intersection. It would include some minor widening on existing South Wadsworth Boulevard from Lockheed Martin to the north. Northbound Waterton Road traffic would continue to use the existing roadway alignment and would have a long acceleration and merge lane onto northbound South Wadsworth Boulevard. A separate left turn lane and protected (barrier separated) acceleration lane would be provided for the northbound Waterton Road onto southbound South Wadsworth Boulevard movement into Lockheed Martin. Southbound traffic on South Wadsworth Boulevard to Waterton Road would exit one-third mile north of the current intersection, and continue on a flyover ramp over South Wadsworth Boulevard. Traffic exiting Lockheed Martin wishing to go south on Waterton Road will merge onto the descending raised portion of the flyover which will be separated from the northbound Waterton traffic by an eighteen-foot median and continue until they merge just north of the Platte Canyon/Denver Water access road (see **Figure 1**).

The Preferred Alternative would combine the separate entrances for the Waterton parking lot and the Audubon Nature Center into one intersection with a new access road constructed on Denver Water, Jefferson County, and USACE property that connects those two parking lots. A median deceleration lane would be provided for southbound Waterton Road to separate left turns from through traffic at this access. The Preferred Alternative also includes a pedestrian underpass north of the Waterton parking lot to improve safety for Waterton Canyon/Colorado Trail users and visitors to the Kassler Center and Denver Water property amenities.

The Preferred Alternative best addresses safety for the two turning movements that currently cause congestion. First, it would eliminate the movement requiring traffic to turn left from southbound South Wadsworth Boulevard to Waterton Road by providing that movement via the new flyover ramp. Second, the Preferred Alternative improves the left-turn movement from northbound Waterton Road into Lockheed Martin by removing the southbound Wadsworth to Waterton traffic from the mix and providing a protected acceleration lane on Southbound Wadsworth for those making the left turn from Waterton towards the Lockheed Martin entrance.

Project designers have worked to avoid impacts to wetlands and other waters of the U.S. that lie within the project area. Project design has been altered to avoid wetland impact areas where feasible and the final design represents the best effort to avoid and minimize impacts to these aquatic resources. Despite avoidance and minimization measures, unavoidable impacts to these resources would occur as a result of the construction of this project.

In summary, the Preferred Alternative would effectively address all elements of the project Purpose and Need, meet project goals, and would provide the best short-term and long-term solution to achieve Jefferson and Douglas counties' long-term vision for the corridor while minimizing impacts to aquatic resources where possible.

3. Methods

In July 2009, wetlands scientists from Jacobs Engineering Group, Inc. (Jacobs) delineated wetlands in the Study Area following the guidelines and criteria of the *USACE 1987 Wetland Delineation Manual* (USACE, 1987) and the *Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* based on characteristics of vegetation, hydrology, and soils (USACE 2008). According to the 1987 Manual, wetlands are those areas inundated and saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances/conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. A wetland was determined to be present at a site if all three parameters were met. The indicator status of vegetation was derived from the *National List of Plant Species That Occur in Wetlands: Intermountain (Region 5)* (Reed 1988). Plant nomenclature follows Weber and Wittman (1996) and the USDA Plants database <http://plants.usda.gov/> (USDA-NRCS 2008a). Soil map unit names were collected from the National Resource Conservation Service Web Soil Survey (USDA-NRCS 2008b). Wetland data forms for wetland and adjacent upland habitat were collected. Wetland units were sampled using the USACE routine wetland determination methods

and data forms. The boundaries of each wetland were collected with the use of a handheld global positioning system (GPS) unit capable of submeter accuracy.

Wetland systems vegetated with trees, shrubs, or persistent emergent plant species are classified as palustrine (Cowardin, et al., 1979). The palustrine system includes all non-tidal wetlands dominated by trees, shrubs, vascular plants, and non-vascular plants. Palustrine wetland classes include emergent (grass, sedge, and forb dominated) and scrub-shrub (small tree or shrub dominated).

Wetland functions and values were determined using the Functional Assessment of Colorado Wetlands (FACWet) methodology.

The indicator status of vegetation was derived from the *National List of Plant Species That Occur in Wetlands (Region 5)* (Reed, 1998). Plant nomenclature follows the USDA Online Plants Database (USDA-NRCS 2008a). **Appendices A** and **B** include wetland data forms and wetland photographs, respectively.

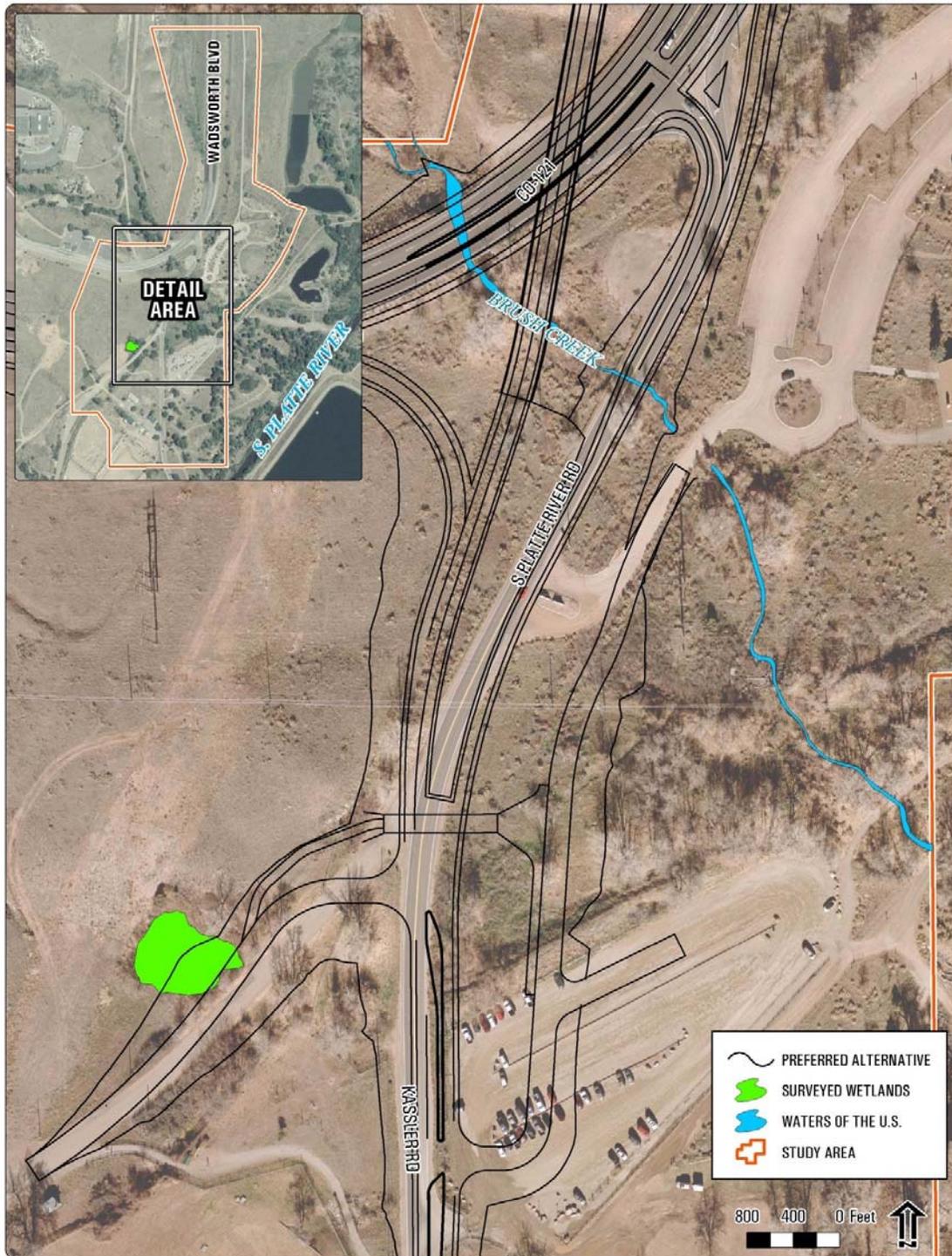
4. Results

The wetland delineation identified one wetland site totaling 0.16 acre within the Study Area (see **Figure 2**). It is a scrub-shrub wetland dominated by cattail (*Typha angustifolia*), Peachleaf willow (*Salix amygdaloides*), and sandbar willow (*Salix exigua*). Soils in the wetland were characterized by low-chroma and redox features. Standing water was present at the time of survey. Given its topographical location along a hillside, it is assumed that the wetland receives its hydrology from a spring or seep. **Appendix A** provides data sheets and FACWet assessment forms for the wetland and corresponding upland area. Representative photos of the wetland and surrounding upland areas are located in **Appendix B**.

Although the wetland is geographically isolated, the present hydrology has allowed for the establishment of a dense vegetative stand, with pooled water at the toe of the hillside slope. Because of the dense vegetation, and due to the slope of the wetland, the source of the seep could not be located.

Brush Creek, a water of the U.S. which outfalls into the South Platte River, bisects the study area and is shown on **Figure 2**.

Figure 2: Wetlands and Other Waters of the U.S. in the Study Area



5. Wetland Functions and Values

The field survey included a functional assessment of Wetland 1 using the FACWet method developed by CDOT to provide rapid, economical, and repeatable wetland evaluations. FACWet was used to assess functions and values of Wetland 1 and was conducted in conjunction with the wetland delineation.

The FACWet method employs a stressor analysis to evaluate the wetlands functions compared to a reference standard condition. Although the USACE has not approved this method to define mitigation ratios, it provides a defensible analysis and the USACE will consider the data provided with the FACWet to assess functions and values of the wetland resources present. It can be used as a tool to help the USACE assess in-kind mitigation ratios for mitigation banking, if needed.

Wetland 1 is a highly functioning wetland, providing wildlife habitat, nutrient/toxicant removal, flood attenuation, and short- and long-term water storage.

6. Jurisdictional Status

It is CDOT policy to mitigate for impacts to wetlands regardless of their jurisdictional status. Therefore, for the purpose of this report and for future consideration of impacts to Wetland 1, it can be assumed that the wetland falls under the jurisdiction of Section 404 of the Clean Water Act. As stated previously, Brush Creek outfalls into the South Platte River and is therefore classified as a jurisdictional tributary to a navigable water of the U.S.

7. Impacts

Wetland impacts can be defined as direct, indirect, and temporary. Both direct and indirect impacts can result in the permanent loss of wetlands. Temporary wetland impacts generally occur from the short-term disturbance necessary for activities like construction access. Following construction activities, temporarily disturbed wetlands can be restored.

Based on the Preferred Alternative for the project, approximately 3, 133 sq. ft (0.072 acres) of unavoidable permanent impact and 420 sq. ft (0.0096 acres) of temporary wetland impacts are anticipated (see **Figure 3**). Wetland impact totals will account for approximately 0.509 percent of total wetland acreage within the study area. The impacted wetland is located within the proposed project footprint associated with cut and fill slopes.

Figure 3: Wetland Impact Area



This wetland area will be impacted with the horizontal realignment of the existing Denver Water Board Maintenance Access road. Project design has been altered to avoid wetland impact areas where feasible and the final design represents the best effort to avoid and minimize these impacts.

Minimization efforts were made to change the grade of the maintenance road alignment; however the Denver Water Board requires a flatter grade for their vehicles. The grade change increased impacts slightly, but was a requirement to gain overall approval from the Denver Water Board. The project design was reviewed to push the maintenance road south; however, this was not feasible as it would result in Section 106/4(f) impacts to the historic Last Chance Ditch.

An additional minimization effort reviewed was the placement of a retaining wall. However, the maintenance road is located on USACE land and leased to the Denver Water Board, requiring USACE to agree to retaining wall maintenance. This option reduces permanent impacts but would still result in temporary impacts to the wetland. A final alternative reviewed was to place the retaining wall where Colorado Trail users and maintenance vehicles share the road. This alternative would likely require additional widening of the road and would result in the same net impact.

Construction equipment activity is required beyond the permanent fill limits for the proposed improvements; therefore, assuming a 5 foot buffer for construction, temporary impacts to wetlands within the study area would total 420 ft² (0.0096 acres). To minimize the amount of run-off into aquatic features, best management practices (BMPs) will be employed prior to, during, and after construction as discussed below in the **Mitigation** section.

8. Mitigation

Mitigation for permanent impacts to wetlands would be provided on a 1:1 ratio and total an estimated 0.072 acre. As currently planned, the mitigation will be in the form of wetland mitigation banking credits, purchased from a mitigation bank. Options include the Middle South Platte River bank in Johnstown, the Mile High bank in Adams County, and the Riverdale bank in Brighton. Choice of a mitigation bank largely will depend on USACE preference and will be discussed during the permitting stage.

Mitigation for Temporary Impacts

The use of CDOT-approved BMPs will be used to offset the extent and duration of any temporary impacts. All appropriate BMPs to prevent and minimize temporary impacts to wetlands will be followed during construction. These BMPs could include:

- In designated temporary work areas, riparian shrubs (primarily willows) will be trimmed to the ground level (not grubbed), and then covered with a geo-textile fabric and an additional layer of straw. These areas (including wetlands) will then be covered with a minimum of 0.61 meters (2 feet) of clean fill. As soon as possible, all temporary fill will be removed to an upland area location. This will protect riparian shrub rootstock and wetland seed banks. If possible, temporary fill of wetlands will occur during periods when plants are dormant or toward the end of the growing season.
- Wetland areas not temporarily impacted by the project will be protected from construction activities by temporary and/or construction limit fencing.
- Sediment control measures will be installed where needed to prevent sediment filling wetlands.
- Fertilizers or hydro-mulching will not be allowed within 50 feet of a wetland.
- All disturbed areas will be revegetated with native grass and forb species. Seed, mulch, and mulch tackifier will be applied in phases throughout construction.
- Where permanent seeding operations are not feasible because of seasonal constraints (e.g., summer and winter months), disturbed areas will have mulch and mulch tackifier applied to prevent erosion.
- A stormwater management plan will be developed with BMPs to minimize adverse effects to water quality.
- Erosion bales, erosion logs, silt fence, or other sediment control devices will be used as sediment barriers and filters adjacent to wetlands, surface waterways, and at inlets where appropriate.
- Construction staging areas will be located at a distance of greater than 50 feet from adjacent stream/riparian areas to avoid disturbance to existing vegetation, avoid point source discharges, and to prevent spills from entering the aquatic ecosystem (including concrete washout).

9. Wetland Permitting

Prior to construction, Jefferson County will coordinate with the USACE to receive authorization under Section 404 of the Clean Water Act for impacts to waters of the U.S., including wetlands. It is CDOT policy to mitigate for impacts to wetlands regardless of their jurisdictional status. Therefore, for the purpose of this report and for future consideration of impacts to Wetland 1, it can be assumed that the wetland falls under the jurisdiction of Section 404 of the Clean Water Act. As stated previously, Brush Creek outfalls into the South Platte River and is therefore classified as a jurisdictional tributary to a navigable water of the U.S.

10. Conclusion

It was determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. Therefore, wetland impacts were considered, minimized, and avoided to the greatest extent possible.

Closing Statement

Based on the above considerations, it is determined that there are no practicable alternatives to the proposed new construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

References

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- USDA-NRCS. 2008a. USDA Plants Database. <http://plants.usda.gov/>. Accessed July 2, 2009.
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Appendix A: Wetland Data Forms and FACWet Assessment Forms

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

Project/Site: WATERTON City/County: JEFFERSON Sampling Date: 7/16/09
 Applicant/Owner: JEFF CO State: CO Sampling Point: JPL-1
 Investigator(s): R. RUTHERFORD Section, Township, Range: T 6 S R 69 W sec 34.
 Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): —
 Subregion (LRR): ROCKY MTN. RANGELAND FOREST Lat: 39° 27' 30.7" N Long: 105° 5' 40.844" W Datum: NAD 83
 Soil Map Unit Name: FLUVAQUENTS, SANDY, 0-2% SLOPES NWI classification: N/A
 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 —, 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>X</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:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
1. <u>Populus deltoides</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>15</u> = Total Cover				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40</u> (A/B)
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Crataegus douglasii</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>15</u> x 2 = <u>30</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species <u>30</u> x 4 = <u>120</u> UPL species <u>55</u> x 5 = <u>275</u> Column Totals: <u>110</u> (A) <u>455</u> (B) Prevalence Index = B/A = <u>4.14</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>10</u> = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Kochia scoparia</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Tribulus terrestris</u>	<u>30</u>	<u>Y</u>	<u>UPL</u>	
3. <u>Carduus nutans</u>	<u>25</u>	<u>Y</u>	<u>UPL</u>	
4. <u>Digitaria sanguinalis</u>	<u>10</u>	<u>N</u>	<u>FACU</u>	
5. <u>Panicum virgatum</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>100</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <u>—</u> No <u>X</u>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				
Remarks:				

SOIL

Sampling Point: UPL-1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/4	100						

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<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)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

Restrictive Layer (if present):
Type: 3'
Depth (inches): Cobble / large stones

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>
<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 along 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 type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/>	Depth (inches): _____	
Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/>	Depth (inches): _____	

(Includes capillary fringe)

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

Remarks:

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

Project/Site: WATERTON City/County: JEFFERSON Sampling Date: 7/16/09
 Applicant/Owner: JEFF CO State: CO Sampling Point: WL-1
 Investigator(s): RUTHERFORD Section, Township, Range: T 6S R 69 W sec 34
 Landform (hillslope, terrace, etc.): HILLSLOPE Local relief (concave, convex, none): CONCAVE Slope (%): 2-4
 Subregion (LRR): ROCKY MTN. RANGE & FOREST Lat: 39° 29' 30.608" N Long: 105° 5' 41.118" W Datum: NAD 83
 Soil Map Unit Name: FLUVAQUENTS, SANDY, 0-2% SLOPES NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <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: <u>Seep wetland on hillslope feeding small depressional wetland.</u>			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B)
4. _____				
= Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. <u>Salix exigua</u>	<u>60</u>	<u>Y</u>	<u>OBL</u>	Total % Cover of: _____ Multiply by: _____
2. <u>Salix amygdaloides</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	OBL species _____ x 1 = _____
3. <u>Salix fragilis</u>	<u>10</u>	<u>N</u>		FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
<u>80</u> = Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators:
1. <u>Typha</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Mentha piperata</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Carex nutans</u>	<u>15</u>	<u>Y</u>	<u>OBL</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. _____				<input type="checkbox"/> Wetland Non-Vascular Plants ¹
5. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
<u>40</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____				
= Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				
Remarks:				

Functional Assessment of Colorado Wetlands (FACWet) Method

FACWet is a rapid assessment methodology that rates wetland conditions through evaluation of ecological stressors that drive wetland functions. Each state variable is rated on a scaled of 0.0 to 1.0 (non-functioning to reference standard or essentially pristine, respectively). Although the USACE has not approved this method to define mitigation ratios, it provides a defensible analysis, and the USACE will consider the data provided with the FACWet to assess functions and values of the wetland resources present. It can also be used as a tool to help the USACE assess in-kind mitigation ratios for mitigation banking, if needed.

The FACWet method was utilized to evaluate the general condition of the wetland associated with South Waterton/Wadsworth Canyon Intersection, Douglas County, CO. Based on this methodology, this wetland area received a composite Functional Capacity Index (FCI) score of 0.81. As a result, this wetland area is rated at Highly Functioning (see complete assessment form in **Appendix B**).

Table - FACWet Score Card

Functional Capacity Indices (FCI)	Wetland Variable Score
Support of Characteristic Wildlife Habitat	0.74
Support of Characteristic Fish/Aquatic Habitat	0.84
Flood attenuation	0.82
Short- and Long-Term Water Storage	0.82
Nutrient/Toxicant Removal	0.86
Sediment Retention/Shoreline Stabilization	0.82
Production Export/Food Chain Support	0.79
Composite FCI Score (out of 100)	0.81

**Appendix B:
Photo Log**



Wetland 1—looking northeast



Wetland 1 - looking northwest



Wetland 1—Soil Profile



Brush Creek