



WETLANDS AND OTHER WATERS OF THE US TECHNICAL DELINEATION REPORT

27th Street Bridge
Glenwood Springs, CO

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Abbreviations and Acronyms

°F	degree Fahrenheit
CFR	Code of Federal Regulations
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
FACWet	Functional Assessment of Colorado Wetlands
FEMA	Federal Emergency Management Act
GIS	Global Information System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HUC	Hydrologic Unit Code
JD	Jurisdictional Determination
LRR	Land Resource Region
MLRA	Major Land Resource Area
NAIP	National Agriculture Imagery Program
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark
OWUS	Other Waters of the United States
Pre-JD	Preliminary Jurisdictional Determination
U.S.	United States
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Service
WGS	World Geodetic System

WETLANDS AND OTHER WATERS OF THE US TECHNICAL DELINEATION REPORT

27th Street Bridge
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1.0 Introduction

1.1 Project Overview

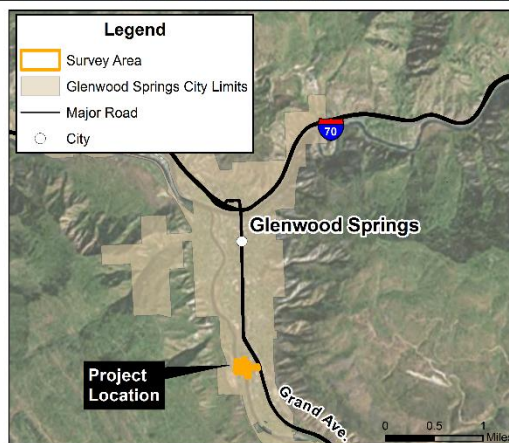
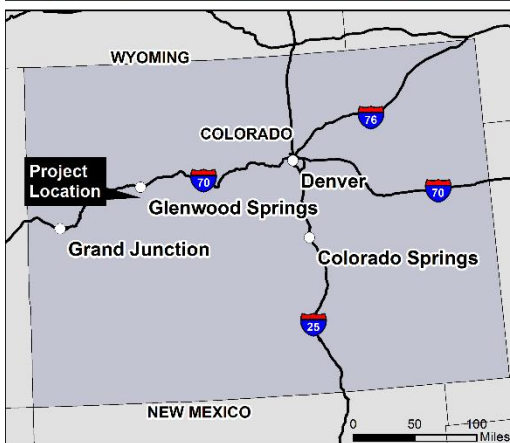
This Wetlands and Other Waters of the United States (OWUS) Delineation Report was conducted by Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) on behalf of the City of Glenwood Springs. This report documents the field assessment conducted on June 28, 2016 to evaluate the presence of potentially jurisdictional wetlands and waters of the U.S. (WUS) that may be affected by the proposed project and regulated under Section 404 of the Clean Water Act (CWA). The U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (EPA) are responsible for making jurisdictional determinations (JD) for wetlands and OWUS. Under Section 404 of the federal CWA, the USACE and the EPA reserve the right to determine jurisdiction on a case-by-case basis (Code of Federal Regulations [CFR], Volume 51, Number 219). This report will be submitted to the USACE Omaha District, Grand Junction Office, along with a Preliminary Jurisdictional Determination (Pre-JD) request to validate the boundaries of the features delineated, as well as, their jurisdictional status. Anticipated impacts to jurisdictional waters, will be captured later in the design process through the Sections 404/401 permitting program of the CWA, as amended.

1.2 Purpose

The project is located in Glenwood Springs, Colorado, between Midland Avenue and South Grand Avenue on 27th Street. It includes replacement of the 27th Street bridge over The Roaring Fork River, improvements to the 27th Street and South Grand Avenue intersection, and replacement of the pedestrian bridge adjacent to the vehicular bridge. The bridge replacement will be designed to meet 20-year traffic demands.

1.3 Survey Area Description

The proposed road and bridgework is located at 27th Street Bridge in Glenwood Springs, Colorado in Section 16 and 21, Township 6 South, Range 89 West. The project Survey Area includes the area of potential project impacts, plus a 100 foot buffer. The entire Survey Area encompasses approximately 22.4 acres. A Project Overview Map of the Survey Area is shown in **Figure 1**.



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 N	City of Glenwood Springs 27th Street Bridge Project Garfield County, Colorado	 amec foster wheeler
	Project Overview	

Figure 1. Project Overview Map

2.0 Methods

2.1 Preliminary Investigation

Prior to conducting field visits, site-specific background information was reviewed to gain a better understanding of the extent and types of wetlands and OWUS that may be encountered within the Survey Area. Data sources reviewed include:

- ▶ General ecological description of Western Range and Irrigated Region, LRR and Major Land Resource Areas (MLRA) of the United States, the Caribbean and the Pacific Basin. U.S. Department of Agriculture (USDA) Handbook 296 (NRCS 2006).
- ▶ Aerial Imagery – Aerial imagery from ESRI Basemap USDA National Agriculture Imagery Program (NAIP) dated 9/10/2015, and GoogleEarth© were reviewed.
- ▶ Topographic map – U.S. Geological Service (USGS) 7.5-minute quadrangles were reviewed online at the USGS National Map Viewer (<http://viewer.nationalmap.gov/viewer/>) A Topographic map of the Survey Area is included as in **Appendix A**.
- ▶ National Wetlands Inventory (NWI) data - U.S. Fish and Wildlife Service (USFWS) Wetlands Mapper database (<http://www.fws.gov/wetlands/Data/Mapper.html>). The NWI data is presented with survey results and National Hydrography Dataset (NHD) data in Section 4.4.2.
- ▶ Soils data - USDA – Natural Resource Conservation Service's (USDA, NRCS 2016) online Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>). Soils data for the Survey Area are included in **Appendix B**.
- ▶ Landcover data - National GAP Analysis Program Landcover Data (USGS 2016).
- ▶ Climate Data - WETS tables (ACIS 2016) (<http://agacis.rcc-acis.org/?fips=08045>). The WETS table is included in **Appendix B**.

2.2 Field Survey of Waters of the U.S.

On June 28, 2016 Corinna Photos and Melissa Greulich, biologist's with Amec Foster Wheeler, conducted a wetland and OWUS delineation within the Survey Area. The methodology used to delineate these features is provided in Section 5.0 below. Data was collected using a Trimble® R1 Global Navigation Satellite System (GNSS) Receiver handheld Global Positioning System (GPS) unit capable of submeter accuracy. GPS data was then imported into ArcGIS. The features were overlaid on topographic and aerial imagery and adjusted using field notes and measurements. All figures were created in ArcGIS 10.2.2. All data layers were created in the World Geodetic System 1984 (WGS 1984).

2.2.1 Vegetation

National Gap Analysis Program landcover data was reviewed within the Survey Area (USGS 2016). Existing GAP Geographic Information Systems (GIS) data was used for field surveys and then redefined based on notes and GPS data points collected during the survey. Nomenclature and wetland plant indicators are consistent with the USDA, Plants Database and *The National Wetland Plant List: 2016 Wetland Ratings* (NRCS 2016a; Lichvar et al. 2016).

2.2.2 Wetland Assessment

Wetlands were identified using the guidelines and criteria of the USACE 1987 Wetland Delineation Manual (1987 Manual) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0 (USACE 2010) based on project location (Environmental Laboratory 1987; USACE 2010).

According to the 1987 Manual and Supplement, wetlands are inundated or 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 is present if all three of the following parameters (hydrophytic vegetation, hydric soils, wetland hydrology) are observed (Environmental Laboratory 1987; USACE 2010):

1. **Hydrophytic Vegetation.** Prevalent vegetation consists of macrophytes that are adapted to soils that are inundated or saturated by surface or ground water. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions.
2. **Hydric Soils.** Soils are classified as hydric and possess characteristics that are associated with reducing soil conditions.
3. **Wetland Hydrology.** Wetland hydrology indicators provide evidence that the site has a wetland hydrologic regime and that hydric soils and hydrophytic vegetation are not relicts of past conditions. Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some point during the growing season.

Data was collected to document all wetlands and OWUS within the Survey Area. Cowardin classification is provided in the results section below (Cowardin et al. 1979). For representative sample points, in areas that did not meet the three parameter rule, (e.g. hydrophytic vegetation not dominant) vegetation sample points were collected. A figure depicting wetland boundaries and data point locations is included in **Figure 2**.

Data documenting wetland characteristics are included in photographs in **Appendix C**, and Wetland Determination Data Forms in **Appendix D**.

2.2.3 Functional Assessment

The Functional Assessment of Colorado Wetlands (FACWet) is a forensic assessment method carried out in a rapid assessment timeframe. FACWet was developed to meet the needs of the CWA administration. FACWet is designed to assist in mitigation planning, improve mitigation success, and inform monitoring design plans, through an evaluation of wetland condition and diagnosis of its causes of impairment (Johnson et al. 2013). A FACWet assessment views general wildlife and fish habitat; flood attenuation; short-and long-term surface water storage; sediment, nutrient, pathogen, or toxicant retention or transformation; shoreline and bank stabilization; food chain support; and groundwater recharge in a weight based assessment. Data documenting the FACWet assessment is found in **Appendix D**.

2.2.4 Delineation of Other Waters of the U.S.

OWUS refers to unvegetated waterways and other water bodies with a defined bed and bank, such as tide channels, drainages, ponds, creeks, rivers, and lakes connected to a traditional navigable water. OWUS typically lack wetland vegetation and may also lack hydric soils. OWUS are identified as perennial, intermittent and ephemeral drainages with flowing water or characteristics of an active channel. The identification of stream resources in the field is typically based upon the presence of an ordinary high water mark (OHWM), observable “bed and bank,” and the presence of documented surface water connections to navigable waters of the US. According to 33 CFR 328.3, “the term ordinary high water mark” means “the line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” (U.S. Congress 1986). In general, the OHWM on a stream is usually determined through an examination of the recent physical evidence of surface flow in the stream channel. The OHWM of the Roaring Fork River was GPSd in the field for the right and left banks within the Survey Area using the Trimble® R1 Receiver, see **Figure 2**.

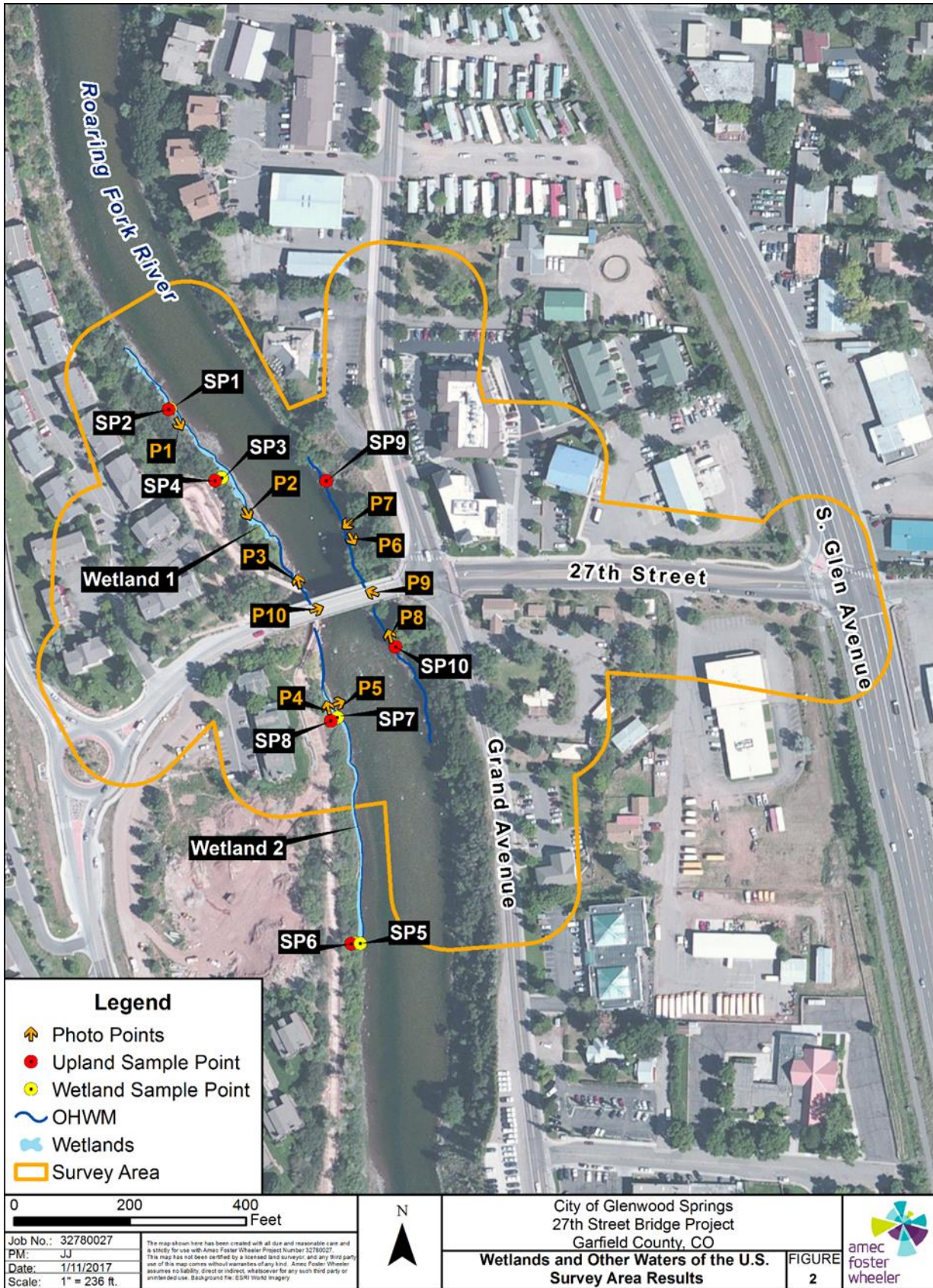


Figure 2. Wetland and Waters of the U.S. Sample Points

3.0 Regulatory Setting

3.1 Clean Water Act

Section 404 of the CWA was established in 1972 to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands (EPA 2016a). Section 401 of the CWA was established to provide states and authorized tribes with a tool to help protect water quality. Under Section 401, a federal agency cannot issue a permit or license for an activity that “may result in a discharge to waters of the U.S. until the state or tribe where the discharge would originate has granted or waived 401 certification” (EPA 2010). In Colorado, under the 401 Certification Regulation, all nationwide CWA Section 404 permits are certified by statute and do not require additional certification by the Colorado Water Quality Control Division (WQCD) (CDPHE 2017).

As of June 29, 2015 the updated CWA was filed in the Federal Registry and took effect August 28, 2015; however, on October 9, 2015 the Sixth Circuit issued an order staying the New Clean Water Rule nationwide, pending review. As such the prior 1986 CWA regulations, 33 CFR 328.3, are the regulating guideline (U.S. Congress 1986; USACE 2015). The USACE is following the 1986 regulation and applicable guidance to make jurisdictional determinations on wetlands and OWUS.

In April 2011, the EPA issued “*Draft Guidance on Identifying Waters Protected by the CWA*”. Section 404 of the CWA 2011 guidance was utilized during field work to identify wetlands and OWUS that may be regulated under the CWA. **Table 1** summarizes key characteristics that identify which OWUS are protected by the CWA.

Table 1. Summary of Key Indicators for Section 404 of the CWA

Based on the agencies’ interpretation of the statute, implementing regulations and relevant case law, the following waters are protected by the CWA:

- Traditional navigable waters;
- Interstate waters;
- Wetlands adjacent to either traditional navigable waters or interstate waters;
- Non-navigable tributaries to traditional navigable waters that are relatively permanent, meaning they contain water at least seasonally; and
- Wetlands that directly abut relatively permanent waters.

In addition, the following waters are protected by the CWA if a fact-specific analysis determines they have a “significant nexus” to a traditional navigable water or interstate water:

- Tributaries to traditional navigable waters or interstate waters;
- Wetlands adjacent to jurisdictional tributaries to traditional navigable waters or interstate waters; and
- Waters that fall under the “other waters” category of the regulations. The guidance divides these waters into two categories, those that are physically proximate to other jurisdictional waters and those that are not, and discusses how each category should be evaluated.

The following aquatic areas are generally not protected by the CWA:

- Wet areas that are not tributaries or open waters and do not meet the agencies’ regulatory definition of “wetlands”;
- Waters excluded from coverage under the CWA by existing regulations;
- Waters that lack a “significant nexus” where one is required for a water to be protected by the CWA;
- Artificially irrigated areas that would revert to upland should irrigation cease;
- Artificial lakes or ponds created by excavating and/or diking dry land and used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
- Artificial reflecting pools or swimming pools created by excavating and/or diking dry land;
- Small ornamental waters created by excavating and/or diking dry land for primarily aesthetic reasons;
- Water-filled depressions created incidental to construction activity;
- Groundwater drained through subsurface drainage systems and
- Erosional features (gullies and rills), and swales and ditches that are not tributaries or wetlands.

Source: (EPA 2016b)

4.0 Baseline Conditions

General knowledge of the Survey Area assists in identifying water features that may constitute potentially jurisdictional OWUS, prior to performing the site visit. The following paragraphs describe the general land uses, geology and hydrogeology, and climate identified within the Survey Area.

The USDA NRCS completed a detailed report documenting the general conditions of land resource areas in the Land Resource Regions and Major Land Resource Areas (MLRA) of the United States, the Caribbean, and the Pacific Basin (NRCS 2006). According to the aforementioned report, the Survey Area falls within Land Resource Region (LRR) E – Rocky Mountain Range and Forest Region, and MLRA: 48A – Southern Rocky Mountains will be referenced as such (NRCS 2016b).

The Survey Area lies within the Flat Top Mountains of the Southern Rocky Mountains. The region is defined by rugged mountains, some broad valleys and fragments of high plateaus (NRCS 2016b). Elevation within the system generally ranges from 6,500 to 14,000 feet above mean sea level (NRCS 2016b). Elevation across the Survey Area site ranges from 5,770 to 5,845 feet above mean sea level.

Geology of this MLRA is affected by crustal uplifts during the late Cretaceous and early Tertiary periods (NRCS 2016b). The area is comprised of Silver Plume and Pikes Peak granites, San Juan Volcanics, and Mancos Shale (NRCS 2016b).

4.1 Land Use

Land use within the MLRA consists primarily of farms, ranches, and urban areas (NRCS 2016b). The majority of the Survey Area consists of the Roaring Fork River, used for rafting, fishing, and wildlife travel. Land use adjacent to the river consists primarily of riparian habitat and single family dwellings.

4.2 Regional Hydrology and Climate

The MLRA lies within the Outlet Roaring Fork River Watershed (USGS Hydrologic Unit Code [HUC] 1401000410), and the Roaring Fork (HUC 14010004) subbasin which drains into the Colorado River. Average annual precipitation ranges from 15 to 19 inches with an average of 26.92 inches in 2015 (ACIS 2016). The average annual temperature ranges from 33 degrees Fahrenheit (°F) to 64 °F (ACIS 2016 – Glenwood Springs #2).

4.3 Survey Area Hydrology

The Survey Area is located within the Canyon-Creek-Colorado River (USGS Hydrologic Unit Code [HUC] 1401000501) watershed, and the Roaring Fork (HUC 14010004) sub-basin. The NHD identifies several USGS “blue-lined” streams within the Survey Area including the Roaring Fork River, the Atkinson Canal, and several unnamed channels (see **Appendix A**).

4.4 Topography and Site Drainage

The Survey Area is located in the USGS Glenwood Springs, CO 7.5 Minute Topographic Quadrangles. The majority of the Survey Area is dominated by the Atencio-Azeltine complex, one to three percent slope soil complex, which is classified as a well drained sandy loam. Two additional soil categories are Ascalon-Pena complex, six to 25 percent slopes which is well drained sandy clay loam, and Water (see **Appendix A**). The USGS “blue-lined” stream of the Roaring Fork River occurs within the Survey Area and flows south to north into the Colorado River, an OWUS.

4.4.1 NRCS Soils

According to the NRCS Web Soil Survey, there are two mapped soil types within the approximate 22.4-acre Survey Area (see **Appendix B**) (NRCS 2016c). The dominant soil types within the Survey Area are the Atencio-Azeltine complex, one to three percent slope soil complex (45.3 percent), and Ascalon-Pena complex, six to 25 percent slopes (28.6 percent), and Water (26.1 percent). Water is listed as a

hydric soil on the national hydric soils list in relation with marsh landforms in Garfield County (NRCS 2015).

4.4.2 NWI and Floodplain Mapping

The NWI data for the Survey Area was reviewed and used to guide wetland delineation efforts in the field (see **Appendix A**). According to the NWI, there are two mapped features within the Survey Area. The Roaring Fork River is mapped as Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded (R3UBH). Additionally, the area parallel to the river is mapped as Palustrine, Emergent, Seasonally Flooded, excavated wetland feature (PEMCx) (USFWS 2016).

According to Federal Emergency Management Act (FEMA) mapping, the majority of the Survey Area is within FEMA zone AE with a one percent annual flood hazard (FEMA 2016). A graphic depicting site hydrology flow and FEMA mapping is included in **Appendix A**.

5.0 Results

5.1 Vegetation

The dominant landcover type in the Survey Area is Developed and Urban. This landcover type is primarily composed of paved areas such as roadways and sidewalks and non-native species. Common species present in this landcover type included bulbous bluegrass (*Poa bulbosa*), cheatgrass (*Bromus tectorum*), and Siberian elm (*Ulmus pumila*). Open water also takes up much of the Survey Area due to the presence of the Roaring Fork River. Landcover, Rocky Mountain-Great Basin Montane Riparian and Swamp Forest was present along the banks of the Roaring Fork River. Common species within the community included chokecherry (*Prunus virginiana*), boxelder (*Acer negundo*), smooth brome (*Bromus inermis*), reed-canary grass (*Phalaris arundinacea*), common spikerush (*Eleocharis palustris*), and narrowleaf willow (*Salix exigua*). The Southern Rocky Mountain Montane Grassland and Shrubland community was concentrated on the southern banks of the Roaring Fork River. This community was mostly large shrubs and small trees. Dominant species included wavyleaf oak (*Quercus x pauciloba*), golden currant (*Ribes aureum*), and rose (*Rosa* sp.). A complete list of all plant species observed within the Survey Area is provided in the *Baseline Survey Report* (AFW 2016).

5.2 Other Waters of the U.S.

A large portion of the Survey Area contains the Roaring Fork River, which is a perennial river. The Roaring Fork River flows north, into the Colorado River, an OWUS. The river is crossed by the 27th Street bridge and road. The river bank has been re-enforced by rip-rap, minimizing wetlands adjacent to the river. Streets, bike trails, and a pedestrian bridge encroach the historic riparian area adjacent to the river. The riparian area consists of Siberian elm, chokecherry, boxelder, narrowleaf willow, wavyleaf oak, golden currant, and rose. The Roaring Fork River encompasses approximately 3.2 acres and 1,235 linear feet within the 22.4 acre Survey Area.

Additional NHD blue-line features identified during preliminary investigation were not in evidence in the field. It is believed that Atkinson Canal and the additional unnamed blue-line features have been placed in underground pipes within the Survey Area.

5.3 Wetlands

The wetland delineation identified two wetland sites (identified as Wetland 1 and Wetland 2) totaling 0.096 acres, or 4,182 square feet within the Survey Area (see **Figure 2**). Both wetlands within the Survey Area fall under the Cowardin classification Palustrine, Emergent, Seasonally Flooded, (PEMC). Wetland 1 and 2 are adjacent to the west bank of the Roaring Fork River, just north and south of the 27th Street Bridge. Wetlands 1 and 2 are separated by an upland area dominated with rip-rap under the 27th Street Bridge.

Wetland 1 totaled 0.053 and is dominated by reed canary grass, common spikerush, narrowleaf willow. Overstory was dominated by boxelder, chokecherry, and Siberian elm. Hydrologic indicators evident

were high water table, saturation, oxidized rhizospheres along living roots, and drift deposits. Hydric soil indicators included sandy redox.

Wetland 2 totaled 0.043 and is dominated by reed canary grass, common spikerush, sedges (*Carex spp.*), narrow willow, narrowleaf cottonwood (*Populus angustifolia*), and chokecherry. Hydrologic indicators evident were surface water, high water table, saturation, oxidized rhizospheres along living roots, and drift deposits. Hydric soil indicators included sandy redox.

The east bank of the Roaring Fork River contained wetland vegetation and hydrology, but lacked hydric soils. The majority of the soil along the east bank of the river are shallow and dominated by disturbed soils and rip-rap.

5.4 Functional Assessment

Given their relatively small size and isolated position, the wetlands in the Survey Area provide fairly low levels of ecological functions. However, the wetlands provide general wildlife and fish habitat, attenuate flooding, remove or transform sediment and nutrients, stabilize stream banks and bottom, and provide food chain support. The FACWet assessment complete for the Survey Area determined the existing wetlands adjacent to the Roaring Fork River to be rated overall as Functioning (C, 0.76). This rating indicates that the wetland is functioning average for most categories. Environmental stressors such as the artificial river alignment, rip-rap, confinement of the river corridor, and adjacency to urban growth, have all impacted the Survey Area wetlands to a degree that they are not functioning as pristine wetlands.

6.0 Summary

Two wetlands adjacent to the Roaring Fork River, totaling 0.096 acres (4,182 square feet) and 3.2 acres (1,235 linear feet) of OWUS (Roaring Fork River) are within the Survey Area. All wetlands within the Survey Area are presumed to be jurisdictional due to their direct connection to the Roaring Fork River, a tributary of the Colorado River. Any impacts to the Roaring Fork River or the adjacent wetlands, would be regulated by the EPA and the USACE. This areport will be submitted to the USACE Omaha District, Grand Junction Regulatory Office, along with a Pre-JD request, to validate the boundaries of the features delineated as well as their jurisdictional status.

7.0 References

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APPENDIX A: TOPOGRAPHIC MAP, NHD/NWI MAP, FEMA MAP

APPENDIX B: SOILS INFORMATION & WETS TABLE

APPENDIX C: PHOTOGRAPH LOG

APPENDIX D: WETLAND DETERMINATION FORMS & FACWET ASSESSMENT FORMS
