Appendix D
Delineation of Waters of the U.S.

DRAFT

Delineation of Waters of the United States

BCAG Transit Facility Property Acquisition Project

Chico, Butte County, CA

July 2012

Prepared for:

Butte County Association of Governments
Attn: Andy Newsum
2580 Sierra Sunrise Terrace, Suite 100
Chico, CA 95928

Prepared by:

NorthStar ENVIRONMENTAL
Formerly Gallaway Consulting

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DELINEATION OF WATERS OF THE UNITED STATES

BCAG Transit Facility Property Acquisition Project
Chico, Butte County, CA

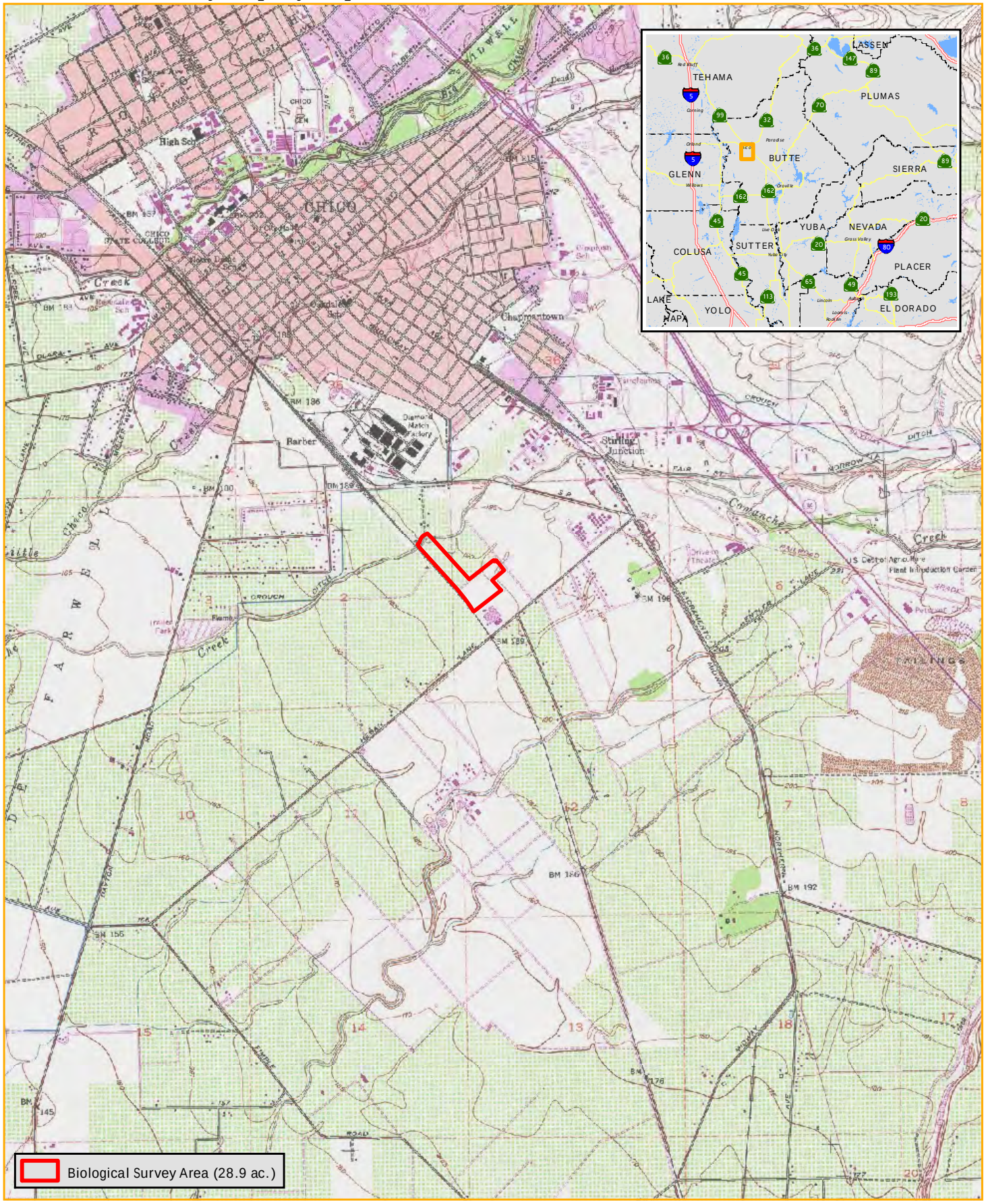
Introduction and Project Location

NorthStar Environmental (NorthStar) conducted a delineation of waters of the U.S. for an approximately 29-acre project area located within the City Limits of Chico, Butte County, California (**Figure 1**). The BCAG Transit Facility Property Acquisition project (Project) is located in Sections 1 and 2, Township 21N, Range 1E, of the Chico U.S. Geological Survey (USGS) 7.5 minute quadrangle map. Surveys were conducted on September 1, 2011 and June 29, 2012 by botanist Elena Gregg. The survey involved an examination of botanical resources, soils, hydrological features, and determination of wetland characteristics based on the *United States Army Corps of Engineers Wetlands Delineation Manual* (1987)*;* the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (2008); and the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (2007).

The Butte County Association of Governments (BCAG) is seeking to acquire a portion of the 34-acre parcel that is immediately adjacent to the existing BCAG transit facility, located on Huss Lane in the southwest area of the City of Chico (**Figure 1**). The proposed project is the creation of an approximately 10-acre parcel that is contiguous with the existing transit facility site. The ultimate size of the parcel to be created and acquired depends upon the anticipated transit facility expansion needs. As such a total of 16 acres of land was surveyed to allow for 6 acres of buffer in case more land was determined necessary in the future or sensitive natural resources were observed on the site and needed to be avoided. Due to storm drainage constraints within the area, the future expansion of the existing BCAG facility will require the installation of a new storm drain pipe and outfall. The proposed storm drainage alignment runs westward along the north side of the proposed Aztec Road extension, continues between the existing Sierra Nevada Brewery-owned railroad spur and the Union Pacific railroad tracks, and then runs parallel with the tracks in a northward direction to Comanche Creek (approximately 12 ac).

This report addresses the nature, jurisdictional status, and landscape position of the wetlands in the survey area; it does not provide information suitable for structural analysis of soils for construction purposes, flood plain delineation, or other purposes not expressly stated. Wetland acreages presented in this report should be considered preliminary, and subject to review and modification by the U.S. Army Corps of Engineers (USACE) during the wetland delineation verification process.

BCAG Transit Facility Property Acquisition **Location**



Within Sections 1,2 of
T21N, R1E Butte County, CA.
Chico USGS 7.5' Quad.
Map Date: 7/13/2012

Miles
0 0.5 1

NorthStar ENVIRONMENTAL
Formerly Galloway Consulting

Figure 1

Site Conditions

The Project is located within the southern City Limits of Chico, Butte County, California (**Figure 1**). The Project site is characterized by flat topography void of wetland features. Hydrology on the site consists of localized, overland runoff from precipitation events and runoff from the irrigated alfalfa field. The overland flow enters Comanche Creek along the northernmost boundary of the site. Average precipitation in the area totals 25.66 inches per year and the average high temperatures in the area range from 63.0 °F in the winter to 87.4 °F in summer annually (WRCC 2011). The elevation of the site is approximately 191 feet above sea level. Soils on the Project site consist of the Chico loam soil series. The Project is surrounded by commercial buildings to the south, train tracks and orchards to the west, irrigated cropland and commercial buildings to the east, and Comanche Creek and orchards to the north. The habitat types present within the Project include disturbed annual grassland habitat and heavily disturbed land void of vegetation surrounding the train tracks. Due to past grading activities, likely from historic agricultural land uses, the 16-acre portion of the Project proposed for land acquisition has become dominated by weedy, non-native, herbaceous plant species. Few trees or shrubs occur within the Project. The trees that do occur within the Project site include mixed oak and landscape trees along Huss Lane and valley oak (*Quercus lobata*) trees along the immediate top of bank of Comanche Creek. Little wildlife was present on the date surveyed, however, many fossorial mammal burrows were observed. The few wildlife species observed included jackrabbits (*Lepus californicus*), scrub jays (*Aphelocoma coerulescens*), and turkey vultures (*Cathartes aura*), and a red-tailed hawk (*Buteo jamaicensis*) and black phoebe (*Sayornis nigricans*) near Comanche Creek.

Survey Methodology

Many of the terms used throughout this report have specific meanings relating to the federal wetland delineation process. Term definitions are based on the *USACE Wetlands Delineation Manual* (1987); the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1989); the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region* (2008); and, the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (2007). The terms defined below have specific meaning relating to the delineation of waters of the U.S. as prescribed by §404 of the Clean Water Act (CWA).

Terminology

Abutting: When referring to wetlands that are adjacent to a tributary, abutting defines those wetlands that are not separated from the tributary by an upland feature, such as a berm or dike.

Adjacent: Adjacent as used in "Adjacent to a traditional navigable water," is defined in USACE and Environmental Protection Agency (EPA) regulations as "bordering, contiguous, or neighboring." Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes and the like are 'adjacent wetlands.'

Atypical situation (significantly disturbed): In an atypical (significantly disturbed) situation, recent human activities or natural events have created conditions where positive indicators for hydrophytic vegetation, hydric soil, or wetland hydrology are not present or observable.

Ephemeral stream: An ephemeral stream has flowing water only during and for a short duration after, precipitation events in a typical year. Ephemeral streambeds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Growing season: The growing season is the portion of the year when soil temperatures at 19.7 inches below the soil surface are above biologic zero (41^{o} F) as defined by soil taxonomy.

Hydric soil: Soil is hydric that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic (oxygen-depleted) conditions in its upper part (*i.e.* within the shallow rooting zone of herbaceous plants).

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Jurisdictional wetland: Sites that meet the definition of wetland provided below and that fall under USACE regulations pursuant to §404 of the CWA are considered jurisdictional wetlands.

Man-induced wetlands: A man-induced wetland is an area that has developed at least some characteristics of naturally occurring wetlands due to either intentional or incidental human activities.

Non-relatively permanent waters: This describes a body of water such as an ephemeral stream, which has flowing water only during and for a short period of time following precipitation events in a typical year. Non-relatively permanent waters (NRPWs) are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Normal circumstances: This term refers to the soil and hydrologic conditions that are normally present, without regard to whether the vegetation has been removed.

Other waters of the United States: Other waters of the U.S. are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three wetland parameters (hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4).

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Plant indicator status categories:

Obligate wetland plants (OBL) – plants that occur almost always (estimated probability 99%) in wetlands under normal conditions, but which may also occur rarely (estimated probability 1%) in non-wetlands.

Facultative wetland plants (FACW) - plants that usually occur (estimated probability 67% to 99%) in wetlands under normal conditions, but also occur (estimated probability 1% to 33%) in non-wetlands.

Facultative plants (FAC) – Plants with a similar likelihood (estimated probability 33% to 67%) of occurring in both wetlands and non-wetlands.

Facultative upland plants (FACU) – Plants that occur sometimes (estimated probability1% to 33%) occur in wetlands, but occur more often (estimated probability 67% to 99%) in non-wetlands.

Obligate upland plants (UPL) – Plants that occur rarely (estimated probability 1%) in wetlands, but occur almost always (estimated probability 99%) in non-wetlands under natural conditions.

Ponded: Ponding is a condition in which free water covers the soil surface (e.g., in a closed depression) and is removed only by percolation, evaporation, or transpiration.

Problem area: Problem areas are those where one or more wetland parameters may be lacking because of normal seasonal or annual variations in environmental conditions that result from causes other than human activities or catastrophic natural events.

Relatively permanent: As defined in the *Rapanos* guidance document, a water body is "relatively permanent" if its flow is year round or its flow is continuous at least "seasonally," (e.g., typically 3 months). Wetlands adjacent to a "relatively permanent" tributary are also jurisdictional if those wetlands directly abut such a tributary.

Significant nexus: A water body is considered to have a "significant nexus" with a traditional navigable water if its flow characteristics and functions in combination with the ecologic and hydrologic functions preformed by all wetlands adjacent to such a tributary, affect the chemical, physical, and biological integrity of a downstream traditional navigable water.

Traditional navigable water: Includes all of the "navigable water of the United States," defined in 33 C.F.R. § 329, and by numerous decisions of the Federal courts, plus all other waters that are navigable-in-fact. As defined in 33 C.F.R. § 329, "Navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the water

body, and is not extinguished by later actions or events which impede or destroy navigable capacity."

Tributary: As defined in the *Rapanos* guidance document a tributary is a natural, man-altered, or man-made water body that carries flow directly or indirectly into traditional navigable waters. For purposes of determining "significant nexus" with a traditional navigable water, a "tributary" is the entire reach of the stream that is of the same order (i.e., from the point of confluence, where two lower order streams meet to form the tributary, downstream to the point where such tributary enters a higher order stream).

Waters of the United States: This is the encompassing term for areas under federal jurisdiction pursuant to § 404 of the CWA. Waters of the U.S. are divided into "wetlands" and "other waters of the U.S."

Wetland: Wetlands are defined as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3 [b], 40 CFR 230.3). To be considered under federal jurisdiction, a wetland must support positive indicators for hydrophytic vegetation, hydric soil, and wetland hydrology.

Determination of Hydrophytic Vegetation

The presence of hydrophytic vegetation was determined using the methods outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1989) and the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region* (2008), which are approved by the USACE for use in conjunction with the *Wetlands Delineation Manual* (1987). Areas are considered to have positive indicators of hydrophytic vegetation if they pass the dominance test, meaning more than 50 percent of the dominant species are OBL, FACW, FAC (Reed 1988). Plant species were identified to the lowest taxonomy possible.

Determination of Hydric Soils

Soil survey information was reviewed for the survey area and the Natural Resources Conservation Service (NRCS) database was consulted on the local soil conditions. The use of hydric soil indicators, as outlined in the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region* (2008), was applied to all soil samples. Official soil series descriptions are provided in **Appendix A** and the distribution of soil map units for the site is shown in **Figure 2**.

Determination of Wetland Hydrology

Wetland hydrology was determined to be present if a site supported one or more of the following characteristics:

BCAG Transit Facility Property Acquisition **Soil Characterization**

Soil data derived from NRCS.
Aerial: Microsoft Web Map Services
Map Date: 7/13/2012

Feet
0 500

NorthStar ENVIRONMENTAL

Figure 2

- Landscape position and surface topography (e.g. position of the site relative to an up-slope water source, location within a distinct wetland drainage pattern, and concave surface topography);
- Inundation or saturation for a long duration either inferred based on field indicators or observed during repeated site visits; and
- Residual evidence of ponding or flooding resulting in field indicators such as scour marks, sediment deposits, algal matting, and drift lines.

The presence of water or saturated soil for approximately 5 to 12.5 percent of the growing season typically creates anaerobic conditions in the soil, and these conditions affect the types of plants that can grow and the types of soils that develop (Environmental Laboratory 1987).

Determination of Ordinary High Water Mark

The lateral extent of non-tidal water bodies (e.g. intermittent streams) were based on the ordinary high water mark (OHWM), which is "the line on the shore established by the fluctuations of water" (USACE 2005). The OHWM was determined based on physical characteristics of the area, including scour, multiple observed flow events (from current and historical aerial photos), shelving, changes in the character of soil, presence of mature vegetation, deposition, and topography. Due to the wide extent of some floodplains, adjacent riparian areas characterized by hydric soils, hydrophytic vegetation, and hydrology may be included within the OHWM of a non-tidal water body.

Determination of Isolated Wetlands

On January 9, 2001, the U.S. Supreme Court issued a decision in the case (*Solid Waste Agency of Northern Cook County* v. *United States Army Corps of Engineers* [the *SWANCC* decision], 531 U.S. 159 [2001]). The Court determined that the USACE authority under the CWA § 404 did not extend to isolated wetlands if they are not "adjacent" to navigable waters. It held that the USACE exceeded its statutory authority by asserting CWA § 404 jurisdiction over the ponds that SWANCC wanted to fill based solely on the use of those "non-navigable, isolated, intrastate" waters by migratory birds. The parameters defined in the SWANCC case were used to identify "non-navigable, isolated, intrastate" wetlands within the project area. These features will still be subject to regulation under the Regional Water Quality Control Board (RWQCB) and § 401 of the Clean Water Act.

Jurisdictional Boundary Determination and Acreage Calculation

The wetland-upland boundary was determined based on the presence or inference of positive indicators of all mandatory criteria. The site was traversed on foot to identify wetlands. Standard data sheets (**Appendix B**) were used to describe plants, soils, and hydrological characteristics. NorthStar conducted the field delineation and prepared the map and acreage calculations (**Figure 3**). The spatial data obtained during the preparation of this delineation was collected using a Trimble GeoXT Global Positioning System (GPS) Receiver on September 1, 2011 and June 29, 2012. The maximum position dilution of precision (PDOP) during data collection was 7.5. No readings were taken with fewer than 5 satellites. Point data locations

were recorded for 25 seconds at a rate of 1 position per second. Area and line data was recorded at a rate of 1 position per second while walking at a slow pace. All GPS data was differentially corrected for maximum accuracy using the nearest National Geodetic Survey's Continuously Operating Reference Station (CORS).

BCAG Transit Facility Property Acquisition **Draft Delineation of the Waters of the U.S.**

Other Waters of the US Features						
Feature	**Designation**	**Label**	**Avg. Width (ft.)**	**Length (ft.)**	**Area (sq. ft.)**	**Acres**
Intermittent	RPW	OW01	19	396.148	7570.911	0.174
			RPW Total =	**396.148**	**7570.911**	**0.174**
			Other WatersTotal =	**396.148**	**7570.911**	**0.174**

All features to remain preliminary until written verification from USACE
Survey: 6/29/12 (EG)
Aerial: Microsoft Web Map Services
Map Date: 7/20/2012

Feet
0 250 500

NorthStar ENVIRONMENTAL
Formerly Galloway Consulting

Figure 3

Results

A total of 0.174 acres of pre-jurisdictional waters of the U.S. were delineated within the project area. The types of waters of the U.S. identified on-site are distinguished as relatively permanent (**Table 1**). These features are mapped at a 1" to 200' scale and are presented in **Figure 3**. Waters of the U.S. acreages presented in this report should be considered preliminary, subject to review and modification by the USACE during the wetland delineation verification process. The wetlands, and the data of interpretation used to delineate their jurisdictional boundaries are described below.

Table 1. Jurisdictional wetland totals delineated within the BCAG Transit Facility Property Acquisition Project survey area.

Other Waters of the U.S.						
Type	**Designation**	**Label**	**Avg. Width (ft.)**	**Length (ft.)**	**Area (ft.^{2})**	**Acres**
Intermittent	RPW	OW01	19	396.148	7570.911	0.174
			RPW Total =	**369.148**	**7570.911**	**0.174**
			Total of all OWOTUS =	**396.148**	**7570.911**	**0.174**

Jurisdictional Features

Other Waters of the United States

Other waters of the U.S. are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three wetland parameters (*i.e.,* hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4). The above definition was applied while delineating all other waters of the U.S. on-site. Drainages exhibited an ordinary high water mark and contained bed, bank, and/or scour morphology. A total of 0.174 acre (396.148 linear feet) of other waters of the U.S. was delineated on-site.

Traditional Navigable Waters
No traditional navigable waters (TNW) occur within the Project site.

Relatively Permanent Waters
One relatively permanent water (RPW), Comanche Creek (OW 01), occurs within the Project site. Comanche Creek flows east to west across the northern boundary of the Project site. Within the Project site, Comanche Creek has a relatively narrow channel with steep banks that were covered in large part with Himalayan blackberry (*Rubus discolor*) and wild grape (*Vitis californica*). A few valley oaks also occurred along the inside of the banks of the creek. The top-of-bank of Comanche Creek was disturbed due to the regular agricultural practices that occur and riparian vegetation has long since been removed from this area.

Non-Relatively Permanent Waters
No non-relatively permanent waters (NRPW) were determined to occur within the Project site.

Potentially Non-Jurisdictional Features

Two potentially non-jurisdictional features occur within the Project site. Non-Jurisdictional feature 01a and NJ 01b are man-made drainages created in upland habitat designed to intercept overland sheet flow from the adjacent irrigated cropland and runoff from the access road during precipitation events. These two features are dominated by disturbed annual upland grasses and do not contain evidence of having a bed, bank, and/or scour morphology. Additionally, the adjacent cropland is sprinkler irrigated; therefore, runoff into the features due to irrigation should be considered minimal.

Significant Nexus

Per the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (May 30, 2007) and the *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision Rapanos v. United States and Carabell v. United States* a significant nexus determination is not required for OW 01 (Comanche Creek) due to the fact that this feature is a RPW that flows directly into a TNW, the Sacramento River, via Little Chico Creek. Comanche Creek flows nearly year-round due to the diversion of waters from Butte Creek and contained flowing water during the June 29, 2012 survey date.

However, a determination will need to be made on the jurisdictional status of the two small drainage ditches on the site. These ditches do drain directly into Comanche Creek; however, they are man-made ditches that were created in upland habitats to drain the access roads and irrigated cropland present. These ditches also did not contain significant evidence of having a bed, bank, or scour, indicating that these ditches do not hold water for very long periods of time and that large volumes of water do not flow through these ditches.

Soils

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) 2006 *Soil Survey of Butte Area, California Parts of Butte and Plumas Counties* identified one soil map unit, the Chico loam, 0-1 percent slopes map unit, within the Project site. This soil map unit is not considered hydric by the NRCS in California. The soil series description is presented in **Appendix A**.

Vegetation

The dominant plant species present within the disturbed annual grassland on-site include hedge parsley (*Torilis arvensis*), wild oats (*Avena barbata*), sharp-leaved fluellin (*Kickxia elatine*), yellow star-thistle (*Centaurea solstitialis*), bindweed (*Convulvulus arvensis*), Johnsongrass (*Sorghum halepense*), medusahead (*Taneatherum caput-medusae*), and rip-gut brome (*Bromus diandrus*). An alfalfa field (*Medicago sativa*) and small patch of planted bread wheat (*Triticum aestivum*) occurs immediately to the east of the proposed storm drain alignment portion of the Project. Within the banks of Comanche Creek on-site, the dominant vegetation includes valley oaks, wild grape, Santa Barbara sedge (*Carex barbarae*), Himalayan blackberry, mugwort

(*Artemisia douglasiana*), dalisgrass (*Paspalum dilatatum*), and a few black walnut trees (*Juglans nigra*).

Hydrology

Hydrology within the Project area is composed of localized sheet flow from precipitation events and runoff from the train tracks as well as the irrigated cropland. Overland sheet flow within the Project area generally flows in a northerly direction towards Comanche Creek or is directed into the two small drainage ditches along the access road and irrigated cropland in the northern portion of the Project and then flows directly into Comanche Creek. Comanche Creek, which is also known as Edgar Slough and Crouch Ditch, flows east to west through the site and continues approximately 7 miles to the southwest where it intersects Little Chico Creek on the Sacramento River floodplain. The creek flows year-round due to the diversion of waters from Butte Creek.

Site Photos

Comanche Creek looking upstream to the east.

NJ01b looking north towards Comanche Creek and adjacent wheat field.

Looking north at Comanche Creek. Feature NJ 01b alongside vegetation break.

Looking north, irrigated alfalfa field on the east side, railroad spur on the west.

Sprinkler irrigated alfalfa field looking west.

NJ 01a looking west where drainage enters culvert under the access road.

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Butte Area, California, Parts of Butte and Plumas Counties

445—CHICO LOAM, 0 TO 1 PERCENT SLOPES

Map Unit Setting

Elevation: 140 to 230 feet
Mean annual precipitation: 22 to 24 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 245 to 255 days

Map Unit Composition

Chico, loam, and similar soils: 85 percent
Minor components: 15 percent

Description of Chico, Loam

Setting

Landform: Fan terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium derived from igneous, metamorphic and sedimentary rock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.28 to 0.71 in/hr)
Depth to water table: About 72 to 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)
Available water capacity: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability (nonirrigated): 3c

Typical profile

0 to 5 inches: Loam
5 to 10 inches: Clay loam
10 to 21 inches: Clay loam
21 to 32 inches: Clay loam
32 to 50 inches: Loam
50 to 70 inches: Loam
70 to 80 inches: Loam

Minor Components

Redsluff

Percent of map unit: 5 percent
Landform: Fan terraces

Almendra

Percent of map unit: 5 percent
Landform: Alluvial fans

Conejo, clay loam

Percent of map unit: 3 percent
Landform: Alluvial fans

Vina, fine sandy loam

Percent of map unit: 2 percent
Landform: Inset fans